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THE EVOLUTION

OF THE

DISEASES OF WOMEN

THE EVOLUTION

OF

THE DISEASES OF WOMEN.

BY

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B19
1894

TO MY EARLIEST TEACHER AND SINCERE FRIEND

SIR GEORGE HUMPHRY, M.D., F.R.S., LL.D.

I Dedicate this Work

AS A SMALL TRIBUTE TO HIS UNTIRING ZEAL

FOR THE ADVANCEMENT OF MEDICAL KNOWLEDGE

PREFACE.

EVOLUTION is the mode of progress of the world. Nothing is, that is not the gradual development of events. Progress for good or evil is the sequence of Nature. The destruction of a nation is the culmination of the effects of destructive agents. Death, except when solely from accident or effluxion of time, is but the manifestation of undue waste of vital action, the neglect of an evident causation. It is an evolving destruction. In woman this is peculiarly apparent. Her life, as woman, is a wonderful vicissitude. Her destruction comprehensible, prognosticable, remediable. To appreciate the abnormal is to prevent the fatal.

The following pages do not pretend to be more than a contribution to the study of the natural history of disease. If it be contended that disease is not natural, it may be replied that the object of Nature is not necessarily life to the individual, but the progress of humanity. This includes the removal of individuals who do not conform to the demands of Nature; and as civilisation not unfrequently contravenes Nature's laws, it is not otherwise than to be expected that its votaries should succumb to her finally immutable law, the survival of the fittest.

The plan of this book is to show the states of the sexual relations as they have evolved in the human race, and the position at which they have now arrived, with their causations and influences on woman; and to trace these influences through their progressive stages, so far as they have tended in the direction of disease. Also to indicate the mode of prevention of such causes of disease, and of such disease, not only in the social, but also in the medical, aspect.

I trust it will not be assumed that I think that the present position of the marriage state is other than an advancement on previous conditions of the sexual relations; but what criticism is advanced on our present state is with the hope that the drop, which may hereby be added to the current of the overflowing river of evolution, may assist towards improvement in the present wretched sexual relations of woman.

Education and the progress of mental development consist in an acquaintance with pre-existent knowledge, perseverance, and the capacity of observation. For the advancement of the world it is necessary that there should be expression of such results in word or work, in the belief that the foundation of the matter in question should be sought out, and that the responsibility of the conclusion should not be shirked; for we are not responsible for the existence of conditions, nor for the causation of their existence, since they are evolutionary. But we are responsible for our opinions, for which we must take the consequences, as must all those who venture to differ from pre-existing views. If the window of our ignorance be still somewhat further raised, and a little more light be admitted for criticism of views and pictures of disease as taken from different points of view, progress may be attained. We daily evolve. What pleases us to-day does not satisfy us to-morrow. We criticise to-day what we wrote yesterday. Advancement is the motto of the age, as heretofore.

Medicine will finally be an exact science. The workers of the present century have largely assisted to make it so, and we all desire to add our share in this direction. This we can only do by exact observation and logical inference. If the conditions, causes, and evolutionary results, as defined in the following papers, be accepted, I think it cannot but be granted that the views of treatment must be adopted.

I fear that I may be charged with reiteration; but, in writing these papers, it has seemed to me that some may, in these days of full work and multitudinous literature, in reading a paper, look for a full statement of the affection; and it may save their time to read on rather than to be constantly referring to other chapters, the pages of which, at this distance from my publishers, I am not able to refer to.

I beg to express my great indebtedness to my friend Dr. Playfair for his kindness and labour in seeing these papers through the press, and to Dr. Hugh Playfair for his assistance therein.

Is it necessary to apologise for the absence of an index of authors from whom knowledge has been gained, and through whose work opinions have been acquired?

The Sociological opinions are derived from the study of Darwin, Herbert Spencer, Schopenhauer, Letourneau, August Bebel, A. Bertillon, and others, and their hosts of authorities.

The Anatomical from Savage, Hart and Barbour, Quain, Gray, Holden, and others; and I beg to express my thanks to Drs. Savage and Hart for their kind permission to copy some of their plates.

The Physiological from Arthur Farre, Minot, and their predecessors.

The Pathological from Coats, Woodhead, and their teachers; and I thank Professor Allen for his valuable assistance in the use of the excellent specimens arranged by him in the Museum of the University of Melbourne, and for some abstruse pathological explanations.

The Gynæcological from the writers and authorities thereon whom I have read or known, or whose knowledge has been incidentally acquired.

The Australasian and Victorian statistics are derived from Hayter's excellent 'Victorian Year Book,' and the deductions and statements may be taken as derived from his admirable work and his kind personal information. I trust I have not misapplied him. Those specially of New South Wales, from Coghlan's 'New South Wales Statistical Register.'

The logical and inductive from generations of antecedent workers. How is it possible to give an honest index of those to whom we are indebted for our views? Those with whom we agree, those from whom we differ, have all given us the opportunity of their experience; and it is to be hoped that we have profited, evolved, progressed.

I beg them to excuse me for the absence of this index of their names while utilising the result of their toils.

For the expressions of present conditions of disease I am personally responsible from experience, always aided by that education which the antecedent writings of observers have transmitted, and the atmosphere of knowledge which surrounds us, and enables those far apart to arrive at the same conclusions, and occasional use of words.

This book is not a compilation; all that is written is individual. After the completion of these papers I find that others, whose works I had scanned but not read, have previously expressed themselves similarly. It is not wonderful that observation of similar facts should lead to similar conclusions, or that, the progress of disease being simply evolutionary, similar conditions should result and be observed. It is the mode of putting things before the mind that may render a class of observations worth recording; and the multiplication of independent evidence has some value.

The influence of reading the experience of others persists. Combined with one's own experience, it creates a realisation of evolution which it is wished here to unfold. A rational view is desirable—a reason for everything, and everything for a reason.

I thank Dr. Clara Stone for the skill and attention which she has given to the drawings, which are taken from nature, except those specially acknowledged.

W. BALLS-HEADLEY.

4 COLLINS STREET, MELBOURNE:
May 1894.

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THE EVOLUTION
OF THE
DISEASES OF WOMEN.

CHAPTER I.

ON THE RELATION OF THE SEXES.

CERTAIN general laws of propagation obtain in man and woman, not less than in all Nature, of which the first is the instinctive, all-pervading desire of union of the male and female generative cells, the spermatozoon and the ovule; and the second, the influence of environment on the laws or customs regulating the mode of such union.

What is this sexual instinct? It is the origin and basis of love, of the attraction of the sexes; the causation of sexual appetite; it is the inherent desire of the continuance of our kind; it is the essence of the *raison d'être* of woman's form, the expression of the cause of her existence as woman; it is the evidence of her ancestral debt; of the instinctive necessity that the female productive cell must meet the male fecundating cell; the object is the propagation of the race, the production of the ensuing generation.

The sense of appetite or taste for food or fluids is identical with that of the sexual appetite; each is but the nerve-incitement for effecting the introduction of that which will produce the ulterior object; thus the appetite for food or liquid is with the object of effecting the nutrition of the body; and the sexual appetite is for the purpose of the introduction or reception of the spermatozoon for the production of the next generation.

Both are normal appetites, and demand satisfaction; when food or the spermatozoon is not supplied, the body suffers.

This instinct of the love and care of the next generation is extraordinarily exemplified in the delight in dolls of young girls, which continues, in spite of the influence of the education of civilisation, not seldom up to the constitutional age of the commencement of the capacity of child-bearing. The child loves them, sleeps with them, dresses, pets, nurses them when ill, talks to them, educates, corrects, and feeds them, gives them social advantages at tea-parties, puts them to bed, and is wretched when a teazing brother injures them; and this without being apparently taught, for she will make a doll of an old rag if nothing better offer. This is not a mere condition of childhood, for boys do not play with dolls. It is evidence of sexual instinct in girls for the bringing up of the next generation, but has no reference to sexual appetite, which may develop subsequently as a cloak for propagation. The same instinct is seen later in women, whether single or married, and into the oldest age, in the form of baby-worship.

In woman the sexual instinct—that is, the natural, unreasoning impulse by which she is guided to the propagation of the race—is usually more pronounced; in man, the sexual appetite—that is, the desire of gratification in the act of union.

In the human race, sexual love is the cerebral expression of the selection of the fittest for the transmission to the next generation of qualities most attractive to and therefore deficient in the lover, as well as those of the lover. It effects continuance, as well as levelling and balance in quality of the race.

As regards the instinctive desire of union, it is not needful to dilate on the power of sexual attraction, which is apparently the *raison d'être* of some creatures, as the male butterfly, who displays his beauty before the female, loves, and dies, and which is the foundation of progress of the human race, as of all other creatures. It is the most powerful instinct in males, and the existence and formation of females are for the purpose of the propagation of their kind, with which their minds, feelings, and conduct are so much engrossed; while the self-sacrificing care bestowed on their young is the admiration of the educated. In the animal kingdom in nature every female mates.

The influence of environment from the earliest ages determined the relations between man and woman. In the earlier times polyandry and daughter-destruction, combined with prevention of pregnancy, were instituted for reasons of war or food supply. Polygamy and concubinage ensued from increased power, access of wealth, sensuality, and from need of population and labour for tillage, but, generally combined in a tribe with the sale or destruction of daughters, or prevention of pregnancy for economic reasons.

With the advent of civilisation, more humane views on the equality and treatment of woman and her offspring led to the passing of laws for monogamy and the prevention of infanticide. The evolution thus occurred:

Among wild animals and all vertebrates the stronger male controls, or the more beautiful attracts, the female, and the sexual relation is effected, whether temporarily or permanently. Among the anthropoid apes, as with wild birds and mammals, some pair and some are polygamous; but general promiscuity does not exist.

The same principles existed among the earliest of the human race, the man mating with the woman on an animal equality, having the same interests and sexual attraction; but the man controlling the woman to some extent as being the stronger, since in her pregnancy and parturition she would necessarily be the weaker. Thus he defended her against wild animals, and maintained his right to her as against other men. The pair were nomadic, living on the creatures and berries and roots that they found, and moving, as the procurable supply ceased, to where food was attainable. Children were born, and the family was founded. The procuring of game, and attack on and defence from enemies, being more effective by several than by only one, the families banded together, thus presently forming a collection of families, which is a tribe.

Several such distinct tribes thus formed, having similar but opposing interests and needs in the common food supply, they would meet, compete, and quarrel; or a member of one tribe would carry off a woman from another; or the more combative and warlike would make a raid on the property and women and children of the richer and more peaceful and feeble. A permanent hostility was thus established, in which it became essential that all unnecessary sources of weakness should be removed. Males were valuable for purposes of war, while females were an incumbrance. Girls thus came to be destroyed at birth, so that the normal proportion was reduced; and, other things being equal, in war the tribe with the fewest non-combatant mouths and impedimenta necessarily gained the day; they carried off the women of the defeated tribe, which thereupon was deficient in females.

Time passed, tribes became more numerous, and some more powerful, and the country over which they had rule more extensive. Various forms of marriage evolved, the women being usually obtained by capture or barter, which continues to this day. For the reasons stated above, the custom of polyandry had gradually been introduced, chiefly in India. Usually the brothers of a family, but occasionally men who were not brothers but of the same caste, collectively took to themselves one wife; the effect being that many men could rapidly move the one household, that all the husbands but one could be absent on a raid, and the family yet be guarded, and that the tilled soil and cattle could constantly be tended. The woman had but the one set of children, of whom a superfluity of girls was destroyed at birth; thus the population in an arid country with limited food supply might be maintained, but was not increased. When the women became deficient in numbers, others from distant tribes were seized or purchased. To such an extent was this warlike and antagonistic tendency carried, that it became among certain tribes a disgrace, and therefore an impossibility, for a man to marry a woman of his own people; and a necessity, in proof of bravery, to steal a wife from an enemy.

Thus polyandry was a mode whereby the tribe was composed mainly of men, with a minimum of women and children, and was adapted to a condition in which rapid movements of attack or retreat formed an essential part of existence; where the demand by the chief for the attendance of his people, whether in his train or for war, was in excess of the convenience of the population; and also where the food supply could not be increased, as in the case of limited rice fields. For were six brothers to have each six children, with wives, there would be forty-eight to feed; and in the next generation, when married, thirty-six families might exist. But if the six brothers marry but one woman who has six children, there are but thirteen; of these six children three might be girls, of whom two, perhaps, were destroyed; the three boys would have but one wife among them, and the families remain one or two. The inhabitants of lamaic Thibet, about Kandy in Central Ceylon, and of other parts of India are still polyandrous, and the custom of destruction of girls is common. Letourneau quotes Skinner of a mountainous Hindoo race. Having asked one of these women, 'How many husbands have you?' 'Only four,' she replied. 'And all living?' 'Why not?' Polyandry has always been an exceptional form of marriage.

Strength and wealth accumulated; and among those who were not polyandrous and girl-destroyers, the people multiplied, and women were in excess of men because of the loss of men in constant wars. Women were property, and the desire of personal acquisition created the desire of individual possession. Various customs evolved. From puberty to marriage, common intercourse was no disgrace; among the quite poor, monogamy was usual; men of power and property took many wives. David as he prospered took more wives; and Solomon had many wives and concubines. Thus with increase of prosperity evolved polygamy, concubinage, and cessation of destruction of female children, but of which the sale or barter continued common; and these became the customs of the age.

In our own time the Mormons have afforded a prominent example of polygamy under the influence of environment, with the object of rapid increase of population in a new country, and of tillage of the soil and rearing of cattle at a minimum cost. Each wife would have an individual tendency—one a cook, a second a seamstress, and a third a hen-wife; all dressed in the simplest and cheapest way, and fed mainly on vegetables. They were directed in 'a word of wisdom' revealed to Joseph Smith, the founder, 'that it is not good to drink wine or strong drink except at the Lord's Supper, and even then it should be home-made grape wine; or to use hot drinks or tobacco, the former being meant for the washing of the body, and the latter for the healing of bruises and sick cattle. Man's proper food is herbs and fruit; that for beasts and fowls, grain; and except in winter, and in case of famine and severe cold, flesh should not be eaten by man.' Brigham Young had seventeen wives and fifty-six children: his favourite wife, Amelia, was sterile. The total number of Mormons is said to be nearly 213,000.[1] With the advance of the people of the outlying states upon the land, the polygamous advantage in the environment ceased.

But as equality of rights of the sexes became more recognised and civilisation advanced, these inequalities in marriage, whether polyandry, accompanied by destruction of girls; or polygamy, gradually though slowly changed; and monogamy, up to the time of the Reformation in the 16th century legally combined with concubinage in all civilised countries, is now the universal law in every advanced nation.

Thus, morality is the expression of the opinion of the age on the condition of the sexual relations as they have evolved according to the environment.

Thus among polyandric races, for a woman to have many husbands is the custom of the people, and is moral.

In polygamous countries, now as in King David's and King Solomon's times, to have many wives and concubines is moral.

In the middle ages, to have a wife and concubines, or to have concubines, was moral; and in certain conditions of men, at least to have a concubine was compulsory.

During the last three centuries monogamy without concubinage is the custom, and it is immoral to exceed on the part of the woman or the man.

Thus, among all races until the 16th century, every woman exercised her sexual powers; and in every native race continues to do so. In England, from 1066 to 1307, a lady was marriageable at fourteen. In Asia, even on the west coast of Syria, whose women are European in appearance, a girl commences to menstruate between twelve and fourteen, is married between fourteen and fifteen, and is called an old maid if not married by seventeen; and practically every girl is married. Such is the normal condition of woman.

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[1] The *Encyclopædia Britannica.*

Thus we arrive at the consideration of the influence and effects of civilisation and monogamy on the sexual relations and on woman, so far as they have evolved at this time.

CHAPTER II.

THE INFLUENCES OF CIVILISATION ON THE SEXUAL RELATIONS AND ON WOMAN.

THE ideal of marriage is the formation of unity, a perfect whole, a complete sexual body able and willing, healthily and happily, to perpetuate the race. It is woman's work to produce the next generation, and to maintain its vitality and further development; and the well-being of the other half of her complete system, her husband. That women are otherwise mentally and physically qualified is nothing to the point; for it remains that there exists no woman who has not been honestly willing, and indeed anxious, at some time to pay her ancestral debt; if she do so her time is fully occupied. It is man's business to complete sexual unity, and to provide sustenance, bodily and mental, for these two halves and the product of their union, the child; in doing this with the increasing requirements of civilisation, he assists the progressive evolution of the human race.

But if by the influences of civilisation either half be deficiently developed in sexual feeling or normal formation for propagation, or maintenance be not provided, complete unity does not result. Hence absence of personal appreciation, differences, and sexual separation.

Among all the lower creatures the more beautiful appearance and need of attraction or power are with the male; and thus it was with man till the advanced establishment of monogamy, for concubinage was legally recognised in a certain measure by all civilised nations and at all times till the Reformation, since when the position has become reversed, and women never dressed more universally or extravagantly than now; also with progressive civilisation and education, and the practical introduction of steam and electricity, came increased essentials, and still greater desires in living.

The load of supplying the increased requirements of living has fallen chiefly on man, so that the life of him who provides for and educates his family is one of great toil and anxiety; while the disposition of the average bachelor, and, indeed, of the masses of our time, with increased knowledge, capacity, and opportunity of enjoyment, is toward less work and longer periods of relaxation, whereby his personal leisure—that is, his egoism—and his sexual instinct—that is, his inclination for marriage—are in direct antagonism, and lead to almost social rupture.

But the inherent compulsion of his strongest instinct is paramount; should he thus add matrimony to his expenses, his toil must be greater; and it is therefore found that his tendency is to delay marriage, and that prostitution is rampant. In case of marriage the tendency is to limitation or avoidance of pregnancy.

Discussing these matters in Japan, an American gentleman, long resident there, said: 'My mother wants me to marry a handsome American girl-friend of hers; a Japanese Minister has suggested his pretty daughter. If I marry the American and live in America, the house, which will necessarily be large for our advanced requirements, and therefore at a considerable rent, must be more expensively furnished than I can really afford; there must be highly-paid helps, and the household expenses will be large; my wife's dress will cost much, if she is to be dressed like her friends, and there is the competition of society and position, and she will do no work. Should children come, much more money is required, and their education and placing in the world need my toil to the grave. To provide for this I must work from morning till night; and from night to morning be thoughtful and anxious, almost in sleep. For what happiness?

'If I marry the Japanese, a little matting floors the rooms; a few movable stools and cushions furnish them; and padded quilts form the bed. My wife meets me at the entrance with loving bows and courtesy, her mother behind her; they bring the slight meals which they and a maid have prepared; the present of a handsome dress or scarf, in which she looks charming, delights her; and society is social and intellectual, not showy and extravagant; there is no need of constant toil, and plenty of time for the enjoyment of life, relaxation, and thought.

'Not being a Japanese, I think I shall not marry.'

On the part of woman, with the comparative deficiency of marrying men, monogamy and deferred or avoided marriage on the part of men lead to increased competition of attraction, whereby she is in greater rivalry with her sex, or to her having to work independently for her living, contrary to earlier custom, which in her thus unprotected state is an increased mental as well as physical toil, for she is in competition with man and woman.

In case of her adopting the state of hetarism, in the present condition of civilisation, the tendency is toward prevention of pregnancy; in case of pregnancy, to the production of abortion; in case of her bearing a child, to concealment of birth; and in view of the destruction of social position and of toil of maintenance, to infanticide.

The competition with man and woman, on which she has thus necessarily entered, induces greater mental education, habitually at the expense of her bodily development and sexual strength, which the laws of evolution have heretofore not shown to be in general conformity with woman's nature and causation. Her competition with woman creates more rivalry in dress and yielding to fashion, which appears necessarily to approximate to that of man, whether past or present, that she may the more freely partake of his society and pastimes, which latter are unsuited to woman and lead to virginal disease, and which in part she habitually discontinues after marriage; those which she maintains confirm the injury, and render her less fit for the healthy propagation and education of the race.

Woman in the independent grades never was so free, cared for, and tended as at present; among the unprovided for and unselected, never more hopeless and hard-worked; but she is a woman, and her sexual instinct of the production and care of the next generation is dominant, unless counterbalanced by development of the mental over the physical, by her appreciation of her defect in physical attraction, or in consequence of failure of her husband to support the family.

The following evidence, which space necessarily limits, is adduced to show the influence and effects of civilisation on women and children.

First as to the proportion of the sexes.

Under the monogamous law the census reports of thirty-one countries or provinces which may be assumed to be rightly civilised, the birth-rate varies from 112 to slightly over 104 boys to 100 girls, in which England and Wales appear as 104⅓, and Victoria and New South Wales as about 105, which was also that of the whole of Australia. It is curious that in England and Wales the proportion of male births, which is less than that of any other European country with reliable statistics, has in the last ten years considerably decreased; and in 1891 in Victoria only about 103½ boys, but in New South Wales nearly 107, to the 100 girls were born. In the various Australian colonies from 1 to 7 more boys to the 100 girls are born.

In Victoria about 6 more males under the age of 45 in every 1,000 of the population die than females. Thus the number of males is decreased, but an excessive number of males immigrate or emigrate according to temporary prosperity; so that the marriageable men are migratory, the final result being that in 1891 there were about 5½ per 100 more males than females of all ages in the colony, and in New South Wales about 9½.

While, however, the males are thus in excess of the females, this ratio does not apply to those of marriageable ages. For in 1891 the marriageable females were in the proportion of 106 to every 100 marriageable males; and there was about 1 in 17 who could never be married, for there were no men to marry them, which is about 6 per cent. But, in fact, nearly twice as many as these never marry, for at the age of 20 and upwards 1 in about 3½ was unmarried, or 28 per cent.; at 30 and upwards 1 in about 8½, or 12 per cent.; at 40 and upwards, 1 in about 10½, or nearly 10 per cent.[1]

The next point for consideration is the marriage state, which is well known to be proportionate to the number of marriageable males, to the general prosperity, and to the occupations of the people. Thus men have a greater tendency to marry in prosperous than in dull times; and the men of rural, and especially of an agricultural, community have a greater tendency to marry than those of an urban one. Thus our centralisation in cities diminishes the marriage rate. In Victoria the marriage rate in proportion to marriageable men is tolerably constant; but in proportion to population it has been falling during the last five years, and in 1892 was 6·64, which is similar to that of the rest of the colonies of Australasia and New Zealand. The mean of twenty-eight years of 7·01 for Victoria is the same as that of Tasmania, which is the lowest in Australasia, and is about the same as that of England and Wales, France, and Belgium, which are below that of Hungary, Prussia, Italy, the German Empire, and Austria; but above that of Denmark, Holland, Switzerland, Spain, Scotland, Norway, Sweden, and Ireland.

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[1] Mr. Hayter informs me that in 1893 there were more marriageable men than women; but they do not marry.

The mean marriage rate of the five colonies situated upon the Australian continent, and of those colonies with the addition of New Zealand, shows a falling off since 1883 or 1884, when it was at a maximum, and was lower in 1892 than in any year since 1880.

Among native races marriage occurs at the time of puberty, when Nature shows the capacity to bear children, and they propagate apparently without undue difficulty; and thus it is with all animals. It is true that our girls are at that age not fit for childbirth, but this is the effect of the heredity, life, and education of civilisation; they ought to be. Granting, then, something for late physical development because of mental education, that is no reason why the satisfaction of the sexual instinct and the act of propagation should be deferred to such a late age of life, nor why it should be in process of being deferred to a yet later age as time in civilisation advances, which is contrary to the indications, dictates, and demands of an organism formed for this purpose, and to the example of Nature.

The following table shows the ages and proportions of unmarried women in Victoria:

In 1891 there were—

Between the ages of—	Percentage of unmarried women to total number of women at these ages.
18 and 20	97·1
20 and 30	54·7
30 and 40	19·3

Thus between the ages of 18 and 20 only about 3 in 100 were married; between 20 and 30, less than every other one; and between 30 and 40 about 4 out of 5, or 20 out of every 100 were unmarried. Thus half our women are debarred by our social system from the production of the next generation during the first half of their sexual life.

As regards the age of brides at time of marriage, it is being deferred. The following table shows that, comparing the decade of 1871 to 1880 with that of 1881 to 1890 in Victoria, fewer marriages up to the ages of 20 take place in the latter than in the former; and after the age of 20 more in the last decade than in the former.

Ages of brides.	Brides per 1,000.		Decrease at ages.	Increase at ages.
	1871 to 1880.	1881 to 1890.	1881 to 1890.	1881 to 1890.
Up to 20 . .	196·29	136·14	60·15	—
20 to 25 . .	462·63	506·18	—	43·55
Over 25 . .	341·08	357·68	—	16·60

Letourneau gives the following tables of A. Bertillon, showing the extremes of marriages at unnatural ages in England and France; to which is added a table for Victoria for each of the four years 1890 to 1893 inclusive, arranged to the million scale, which indicate at what a pass the influences of civilisation on marriage in men and women may arrive. It is quite unnecessary to dilate on the effect on women and on propagation.

Marriages with women of 50 years and upwards.—In a million marriages.

In France.		In England.		In Victoria.				
Age of Bachelors.	No. of Marriages.	Age of Bachelors.	No. of Marriages.	Age of Bachelors.	No. of Marriages.			
Years		Years		Years	1890	1891	1892	1893
18–20	64	16-20	0	18–20	—	—	—	—
20-25	109	20–25	5	20–25	—	—	—	130
25-30	151	25–30	12	25–30	218	—	—	—
30-35	188	30-35	22	30–35	—	218	354	—
35–40	257	35-40	40	35–40	437	437	220	260
	769		79		655	655	574	390

Marriages with men of 60 *years and upwards.—In a million marriages.*

In France.		In England.		In Victoria.				
Age of Girls.	No. of Marriages.	Age of Girls.	No. of Marriages.	Age of Girls.	No. of Marriages.			
Years		Years		Years	1890	1891	1892	1893
15–20	94	15–20	2	15–20	—	—	—	—
20–25	139	20–25	15	20–25	546	547	688	521
25–30	176	25–30	32	25–30	—	328	574	1,304
30–35	242	30–35	49	30–35	656	132	1,264	1,956
	651		98		1,202	1,007	2,526	3,781

Thus in France nearly 10 marriages of women of 50 years and upwards to bachelors between 18 and 40 take place to 1 in England; and almost at the French rate in Victoria, but at later ages of the men; and in France nearly 7 marriages of men of 60 years and upwards to females between 15 and 35 to 1 in England; but in Victoria there are from nearly twice to six times as many as the French rate, but again at later ages.

A study of the Victorian numbers in this table shows that, for the 4 years, the number of men of from 20 to 40 years of age marrying women of 50 years of age and upwards is steadily decreasing; but the number of men of 60 years and upwards marrying women of from 20 to 35 is rapidly increasing, more than three times as many such marriages occurring in 1893 as in 1890. Evidently an old man's opportunity of marrying a young wife is rapidly increasing.

Turning to the birth-rate: in 1892 the birth-rate of Victoria was below the average in all the colonies of Australasia except Western Australia and Tasmania. In New South Wales, Queensland, South Australia, and New Zealand, the rate was absolutely the lowest recorded during the whole period of 27 years; that for the latter colony (27·8 per 1,000), moreover, being the lowest recorded in any colony since 1864; in South Australia it was also lower than in any other year shown in the table; whilst in Queensland it was lower than in the previous years. In Victoria the rate is in 1892 lower than in any year since 1860, except 1880 and 1885. In Western Australia it was considerably below the average of the 14 preceding years; and in Tasmania it was lower than in any year since 1880.

Annual Victorian birth-rate, 1860 *to* 1892.

—	Births per 1,000 of mean population.
1860	42·81
1865	42·40
1870	38·07
1875	33·94
1880	30·75
1885	31·33
1890	33·60
1891	33·57
1892	32·54
Mean of 33 years	35·73

According to the reports of the Registrar-General of England, the births in the United Kingdom have fallen off by nearly 6 per 1,000 during the last 20 years; in 1890 the rate was lower than any year since 1870, and, for the first time, was less than 30 per 1,000 persons living.

Birth-rate in the United Kingdom.

—	Births per 1,000 of the population.
1871	35·0
1881	32·5
1890	29·3
Mean of 20 years	32·69

The proportions in comparison with those of European countries are shown in the following table:

—	Birth-rates per 1,000 of population.	—	Birth-rates per 1,000 of population.
Hungary	44·2	Victoria	32·6
Queensland	39·0	England and Wales	31·4
Austria	37·7	Scotland	31·4
Italy	37·6	New Zealand	31·2
Prussia	37·3	Norway	30·4
Western Australia	36·8	Belgium	29·3
German Empire	36·5	Sweden	29·0
Tasmania	34·6	Switzerland	27·5
New South Wales	34·4	France	23·1
South Australia	33·9	Ireland	22·8
Holland	33·6		

The proportion of legitimate births per 1,000 of married women at reproductive ages (15 to 45) was 302 in 1871 and 1881, and 297 in 1891 (the census years).

With regard to the number of children born to a marriage, the number in Victoria in 1874 was 5·19, in 1891 3·97.

Hayter says: 'The figures show a steady diminution in the proportion of children born, amounting, notwithstanding a slight revival in 1887 and 1888, in the 18 years, to a child and a quarter per marriage, or 5 children to every 4 marriages.

'It is evident that, if the births increased with the marriages as they should do, the proportions should remain steady; but this is shown not to be the case. There are, however, many matters affecting the birth-rate of infants, respecting which it is not possible to obtain precise information. The falling-off shown by the figures in the last column of the table is a result which, although perhaps it could not be proved, may be conjectured to be owing to the increasing desire of married women to avoid the cares of maternity, and the steps taken by them—often, no doubt, with the concurrence of their husbands—to prevent its occurrence.'

The desire of women to have children, to perform their sexual duty, is often intense, and this may be still further accentuated by the feelings of the husband; but the diseases induced by delayed marriage may have rendered this impossible. From the difficulty of civilised women to bear children normally, they become ill, and desire health in order to bring up what children they have borne, and the strain, toil, and expense of no more. Hence, again, limitation of families. 'According to this mode of reckoning it would appear that there are, upon the average, fewer children to a marriage in Victoria than in any of the other Australasian colonies. It seems that in all the colonies except Tasmania and New South Wales there is a tendency for the average of children to a marriage to decrease in numbers, the proportion in the later years not having been so high as in the earlier years shown in the table. In 1890, however, the proportions were about the average in all the colonies named in the table, except Victoria and New Zealand.'

The following table shows the children to a marriage in various countries:

—	Number of children to each marriage for a series of years.	—	Number of children to each marriage for a series of years.
Ireland . . .	5·46	Scotland . .	4·43
New Zealand . .	5·25	Holland . . .	4·34
Western Australia .	4·82	Victoria . . .	4·22
South Australia .	4·73	Belgium . . .	4·21
New South Wales .	4·70	England . . .	4·16
Queensland . .	4·60	Sweden . . .	4·01
Italy . . .	4·56	Denmark . .	3·55
Tasmania . .	4·51	France . . .	2·98

'Ireland is at the head of the list, but it may be questioned whether the high proportion prevailing there does not in some degree result from the fact that the registration of marriages is more defective than that of births. Ireland is closely followed by five Australian colonies, after which comes Italy, and then Tasmania. Ireland, Italy, Scotland, and Holland are the only countries out of Australia which stand above Victoria.'

Of the unmarried women in Victoria between 15 and 45 years of age, Hayter, guided by the proportion of illegitimate to legitimate births recorded, estimates that in 1891, exclusive of public prostitutes, 1 out of every 21 was living in concubinage. This only refers to those who bore children, and the number is regularly increasing since 1875, and is larger in 1892 than in any previous year quoted.

Concubinage, 1875 *to* 1892.

Year.	Women living in concubinage, exclusive of prostitutes, per 100 single women between 15 and 45 years of age, living in Victoria.	Year.	Women living in concubinage, exclusive of prostitutes, per 100 single women between 15 and 45 years of age, living in Victoria.
1875 . . .	3·36	1890 . . .	4·65
1880 . . .	4·39	1891 . . .	4·26
1885 . . .	3·54	1892 . . .	4·78

M. Bertillon, in 1859, states that in Paris more than a tenth of the couples were living in concubinage.

Von Dettingen estimated that in 1870 there were 80,000 prostitutes in London, and August Bebel states that the number in Paris is from 60,000 to 100,000; in Berlin from 25,000 to

30,000; in Hamburg, in 1860, every ninth woman above the age of 15 was a prostitute.

In most of the colonies illegitimacy increases. Thus, in 1892, the proportion is higher in Victoria, New South Wales, South Australia, and New Zealand, than in any year of the last 17, and in Queensland except in 1890; in Tasmania it has decreased from 1885 to 1891.

Illegitimate children born to every 100 *children born.*

—	New South Wales.	Victoria.	Tasmania.	Queensland.	New Zealand.	South Australia.
1872 .	4·03	2·99	—	2·92	1·42 (in 1873)	—
1881 .	4·26	5·09	4·40 (in 1882)	4·20	2·85	2·25
1890 .	5·26	5·09	4·05	4·85	3·30	2·50
1891	5·36	5·36	3·72	4·65	3·49	2·93
1892 .	—	5·59	—	—	—	—

For many reasons, statistics of illegitimacy generally understate the truth.

The illegitimacy in various countries is as follows:

Illegitimate children born to every 100 *children born.*

Austria	12·9	Italy	6·8	Tasmania	4·1
Denmark	11·2	Portugal	5·6	Queensland	3·9
Sweden	10·2	Spain	5·5	Holland (1884-1885)	3·2
Germany (1889)	9·3	England	4·7	Russia	3·1
Belgium (1888-1889)	8·7	Switzerland	4·6	Ireland	2·7
Scotland	8·2	New South Wales	4·4	New Zealand	2·6
Norway (1882-1886)	8·1	Victoria	4·3	South Australia	2·3
France	8·1	West Australia	4·2	Greece	1·6

'Illegitimacy in England and Wales appears to be commoner than, and in Scotland twice as common as, it is in any of the Australian colonies named, except Victoria and South Australia. In Ireland, on the other hand, it seems to be less prevalent than in any of those colonies except South Australia and New Zealand. In Victoria, illegitimacy appears to be less prevalent than in 14, and more so than in 9 of the countries.'

With reference to possible infanticide, the deaths of infants under 1 year are worthy of consideration, of which the table for various countries is as follows:

Infantile mortality in various countries.—Deaths under 1 *year of age to* 100 *births.*

Würtemberg	31·25	Switzerland	18·79	West Australia	12·26
Bavaria	30·84	France	16·60	Scotland	12·20
Saxony	28·22	England	14·92	New South Wales	11·90
Baden	26·17	Belgium	14·82	Tasmania	10·56
Austria	25·63	Denmark	13·75	Norway	10·49
Alsace-Lorraine	21·27	Sweden	13·19	Ireland	9·50
Italy	20·97	Victoria	12·68	New Zealand	8·74
Prussia	20·78	Queensland	12·64		
Holland	19·32				
Mean	17·18				

To summarise: by the foregoing it is seen that in Victoria, of women between the ages of 20 and 30, more than every other one is unmarried, and that 15 out of every 100 have not married at the age of 40:

That the marriage rate in Australasia in proportion to population is decreasing, and was lower in 1892 than in any year since 1860, except in 1875 and 1880, which were slightly lower; that that of Victoria, which is about the lowest in Australasia, is about the same as that of England and Wales, France and Belgium; that 5 other European countries are above it and 8 other European countries are below it; and it may consequently be asserted that the general proportion of the European countries are considerably below a marriage rate equal for the sexes, and that a large number of women can never be married, and in a proportion similar to that of Victoria:

That the age at marriage is unduly late, and is being still further deferred:

That the birth-rate in Victoria is lower in 1892 than in any years since 1860, except 1880 and 1885, and is steadily decreasing:

That the birth-rate of Australasia has steadily been declining and is lower in 1891 than in any other year of the last 18, which years are those quoted in the statistics; and in New South Wales and New Zealand is the lowest recorded in 27 years; that the Australasian birth-rates take a good position among those of European countries, and that, therefore, the birth-rates of European countries show a similar declension:

That in Victoria the proportion of legitimate births per 1,000 of married women is declining:

That in Victoria the number of children to a marriage is steadily and largely decreasing, and that there are less there than in any of the other Australasian colonies; that in all the colonies, except in Tasmania and South Australia, there is a tendency to such decrease; that the Australasian colonies rank well among European countries, and that, therefore, it may be asserted that such European countries have similarly decreased:

That in Victoria, in 1891, at least 1 woman in every 21, and certainly more, was living in a state of concubinage:

That in all the colonies of Australasia, except Tasmania, illegitimacy is steadily on the increase; that as illegitimacy in the Australasian colonies occupies a low statistical position as compared with those of European countries, it is to be assumed that it is rife among them, even if it be not increasing:

That as to possible infanticide, the colonies of Australasia rank quite low down in the mortality of children under the age of 1 year; that it is notorious that infanticide is prevalent in Victoria; and that, therefore, it is possible that want of due care of infants, if not infanticide, is to be apprehended in European countries not less than is known to exist in Victoria.

Thus, in the present state of civilisation, a large number of women cannot marry; and in these days of depression fewer will marry:

A large number of women live in concubinage, which will largely increase for the next few years:

There is an increasing ratio of illegitimate births, which will also increase:

An undue number of children die, and child neglect or murder will be more frequent.

That a large number of women in civilised countries cannot marry, or marry at an age when they become injuriously affected, is no improvement on the sexual condition of women in a state of Nature, or in conditions of less advanced civilisation; it is similar to ancient customs that a large number of women live in concubinage, and that an undue number of children die, thus approximating to the custom of destruction of children of olden times. The strongest instinct in the animal kingdom is thus, legitimately, limited by our present social state, and by the marrying proportions of the sexes; but it largely maintains its force illegitimately. Thus civilisation has not apparently perfected the condition of women from the point of view of invariable sexual opportunity; nor has monogamy compelled the selection of the fittest from some social aspects.

If it be said that by sexual selection the race has advanced, and that the residuum is immaterial in the great progress of the world, it may be answered that marriage should not be under such narrow laws as those that at present govern the number of marriages in civilisation; nor under narrower laws than those that govern selection in concubinage, and the production of illegitimacy; and that in any case marriage should not be progressively deferred to later ages in women; nor that children should be progressively more limited in number, which prevents due increase of the nation, and the opportunity for the birth of higher organisations; for it is not necessarily the first or second child that is the best endowed, physically or mentally. No! it is an artificial and temporary disorganisation in evolution, doubtless in the direction of future more advanced social developments.

Woman may be said to have been emancipated by civilisation; and as she became free and independent, and her sex became excessive in numbers in proportion to marrying men, and monogamy was alone lawful, she entered the world as a competitor in two classes: firstly, as against other members of her sex in power of attraction; and, secondly, where she has to earn her own living, as against men and women.

The competition as against other members of her sex for power of attraction demands an increased development of her mind, and the adorning of her body in accordance with fashion. The competition for her living as against men and women requires as well the development of her mind as regards work, which is frequently excessive and unhealthy in relation to her sexual conformation.

The former case, demanding the development of her mind, which is education, and the adornment of her body, which is dress, may first be considered.

In her education she ceases to be constantly in the open air, and to develop her muscles by free movement. For hours daily she leans over a desk in a constrained position; and, should she have capacity for higher mental attainments, her nervous system is apt to develop at the expense of her body. Hence a sense of refinement, and aspiration for the intellectual or beautiful, rather than for the sexual and physical. The organs of reproduction thus tend to be secondary to the mind, and are liable to have a feeble development. The descendants of such a woman may be subject to a progressive hereditary degeneration, so that the uterus may become small and feeble, and the opening of the canal so diminished in size that virginal disease ensues, and that pregnancy does not occur; or if it do so by chance, parturition is effected with difficulty, and at the expense of lacerations and subsequent disease. Thus high mental culture is antagonistic to healthy sexual development and child-bearing; the one yields to the other. These women, who are apt to be highly attractive by their refinement of feeling and appearance, are frequently devoid of sexual appetite of any kind; may have a limited desire for children, and experience only disgust at coitus, however willing they may be to share the social advantages of marriage. The degeneration or absence of the sexual instinct or appetite is representative of the degeneration or diminution of the race.

While, however, the sexual organs may be deficiently developed, and desire of union absent, there still remains the hereditary instinct to produce a member of the next generation, to have a baby; and this continues to be paramount with the woman, unless her environment, as her means, or her health render it of greater importance that she should cease to bring forth more children, but should have strength to bring up those she has.

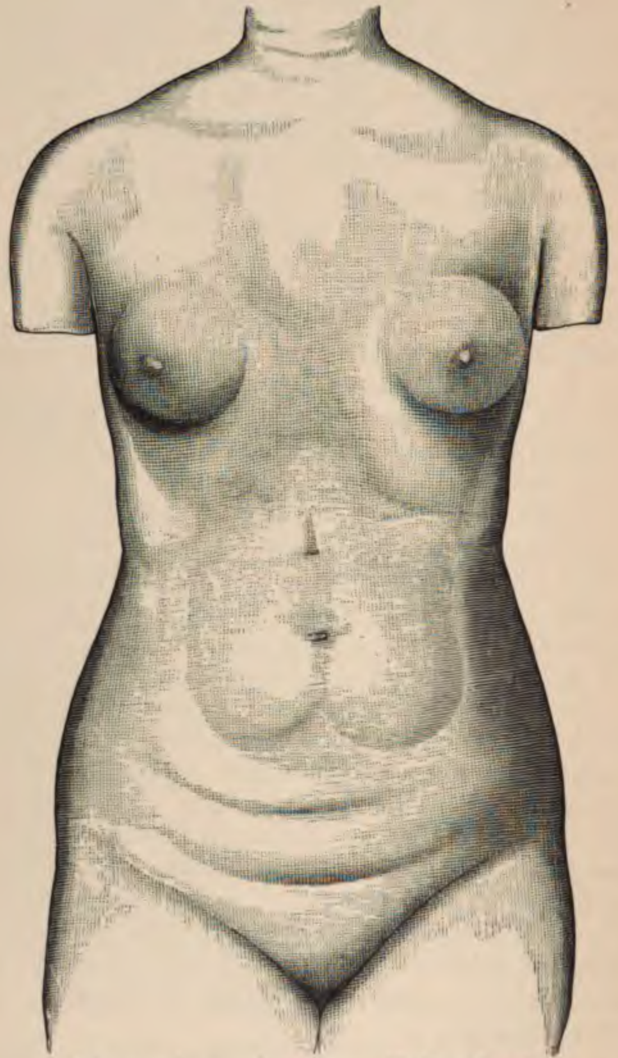
The selection of the fittest has resulted in a race of women of such extraordinary physical growth and beauty as has probably never before existed, but whose sexual growth is liable to be so affected by mental culture, mode of dress, and delayed or non-marriage, that never before were uterine abnormalities of development, disease, and difficulty in parturition so prevalent. How strange, absurd, and sad to find a fine, apparently perfect, woman with a little feeble uterus, incapable of impregnation without an operation; and that one out of nine in hospitals, and a larger percentage among the upper classes, cannot produce her child without the aid of forceps; and many more not without lacerations, misplacements, and evolving disease. While the developing brain of man is probably increasing the size of the head in birth, the normal capability of parturition of women is decreasing.

Of the women who have no disposition for higher brain culture, and who are sexually well developed, the influences of dress, and of deficient or delayed marriage, suffice to tend to affect them unhealthily.

In England, since the advent of the Normans, it has been, with very short intervals, the invariable custom for women of position to wear tight-fitting dresses. The men and women rivalled each other in copying each other's mode of dress, and the armour of the former influenced the form of the latter; stays formed of steel, or strengthened with wood or whalebone, were adopted to give opportunity for the quite tight-fitting dress so generally fashionable during the last eight centuries; and these have been commonly worn up to the present time, as is now exemplified in all women, and in fashion-plates; and which, happily for the incomes of medical men, will not be altered, on account of the influence of this competition. While, however, the masses of the people were poor and simple, they were not exposed to this injury, which has been universally adopted since they became richer or more democratic. It is difficult to overrate the damage done to women by stays. But there is not only the influence of the stays, but also the weight of the skirts attached to them, which accentuates the force. These skirts in hot weather weigh from four to five pounds, and in cold from seven to eight; applied round the waist, these bear upon the abdomen, and, particularly in fat girls and on stout or lax pendulous abdomina, greatly accentuate the influence of the pressure of the stays.

If a meal of half a pint of fluid, soup, meat, vegetables, pudding, and perhaps cheese and bread, be put in a jug, and in imagination introduced into the stomach in this state of compression, what an additional distention downwards is created, and how difficult must be the process of digestion! It is as if a woman tried to work in a corner with a man leaning against her and preventing her movements. But the injury does not

FIG. 1.

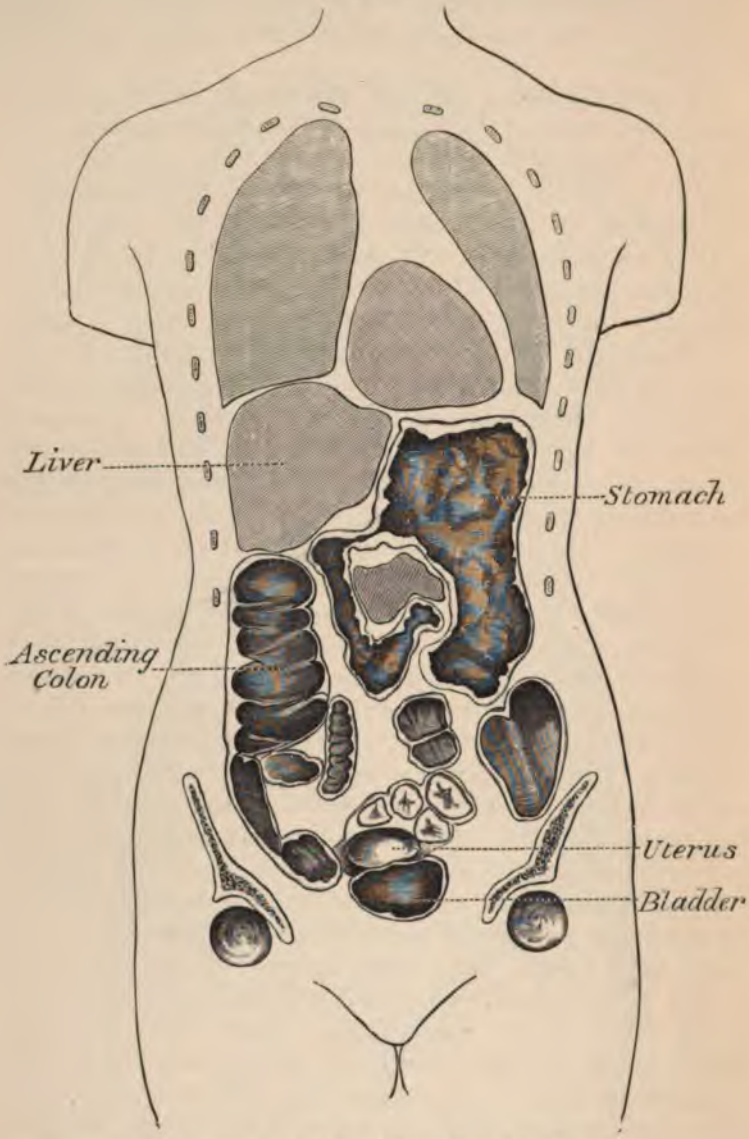


The normal mature female form. (*D. Berry Hart.*)

end here; for the food is presently passed on into the intestines in a partly undigested state; it is not the business of the intestines to deal with such undigested food, and their proper work is inefficient.

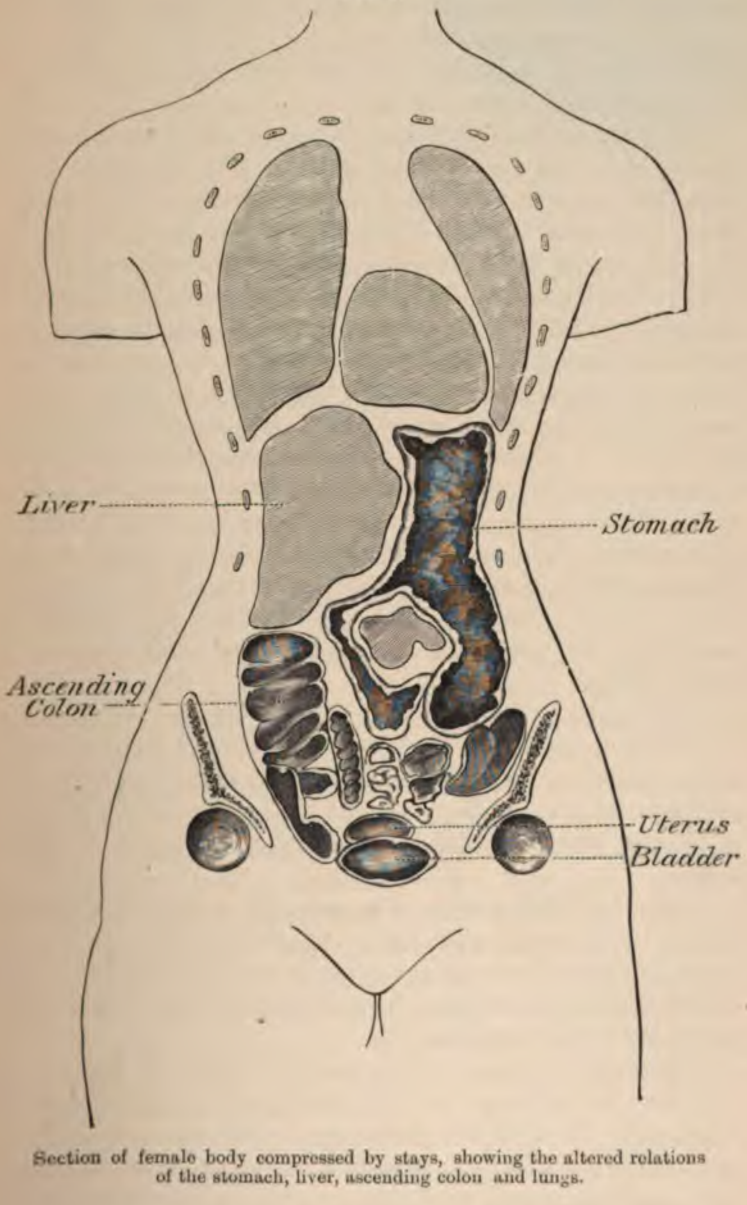
Thereby the lower ribs and the breasts, when large, are compressed; the lungs are squeezed and forced upwards; the heart is displaced; the liver, stomach, and intestines are pressed downwards, so that they tend to push forwards through the abdomen, which is, however, supported by the prolongation of the stays to the pubes. The force is, therefore, directly conveyed into the cavity of the pelvis, and in virgins is firmly resisted by the strong pelvic floor. Thus the uterus is forced downwards from above, and its descent hindered by the floor of the pelvis. It necessarily doubles on itself; and hence virginal flexions and partial descent, and chafings of the os pressed against the vagina, producing menorrhagia and inflammatory disease. The taking of food into the stomach accentuates the internal pressure; and in pregnancy these influences are greatly increased. Thus the compression of the stomach, intestines, rectum, and liver produces indigestion, flatulence, and constipation, so that the retained fæces tighten the packing of the abdominal cavity enclosed within the stays; and the absorbed moisture of the stools poisons the blood, injures the appetite and digestion, and induces kakæmia, spanæmia, and amenorrhœa. Disease of the liver, kidneys, and spleen, may ensue. Some women are subject to irregular action of the heart, palpitation, and to fainting fits, particularly at balls; and some die from this pressure on the heart. A tailoress of twenty-two, thin, sallow, and plain, who makes trowsers up to thirteen hours a day with a treadle sewing-machine, and has bread-and-butter for lunch, has had for the last two years dysmenorrhœa and shortness of breath. Five years ago she was for five weeks in bed with typhoid. Her heart, displaced upwards, gives evidences of aortic regurgitation. The uterus is fairly developed, the opening rather small, and the cervix and body are tightly anteflexed. Her stays, long and strong, which she wears throughout her work, are pulled in five inches; she says she does not tight-lace: why does she do it? From the keenness of competition in attraction in a silly fashion.

FIG. 2.



Section of normal female body. (*Berry Hart*, after *Ruedinger*.)

Fig. 3.



Section of female body compressed by stays, showing the altered relations of the stomach, liver, ascending colon and lungs.

Woman's invariable statement that she does not pull herself in is as truthful as that of the unmarried girl pregnant six months with a strong fœtal heart, who says it is impossible. Both are the teachings of civilisation for centuries, and are hereditary through her sex for generations.

No woman who wears stays is normal, for the supporting muscles of her back are atrophic, and she says she would ache if she left them off; and they always compress to some extent. Woman has come to be so feeble in the muscles of her back, that she cannot stand comfortably without splints around her body. The foundation of virginal disease is laid, which may be increased by the occurrence of delay or absence of marriage, and which parturition continues. A Guiana woman bears her child, and immediately rises and nurses her husband in pretended childbed; other native races make no difficulty about childbirth. A civilised woman is delivered of her child with difficulty, and perhaps by art, and suffers lacerations. Her sexual diseases appear to be rapidly becoming usual, probably mainly due to the masses of the people becoming better off, and adopting the above customs, which are antagonistic to health. Thus civilised woman is extremely invalid; but fashion is omnipotent, though woman suffer or die, for competition is in the ascendant.

It is the duty to an unknown man of the girl, who intends to become a wife, and of the wife to her husband, to be healthy, and to retain her health is to retain her husband's love, for the sexual instinct is the expected child; does she fulfil this duty reasonably when she deforms her body and renders herself unfit?

Thus tight-fitting dress is a necessity produced by competition in civilisation; and, being antagonistic and injurious to woman's natural form and causation, it necessarily follows that civilisation in this direction is antagonistic to woman's health, and to normal propagation.

The evil of overdress is apparent; but it is due to the deficiency of marriage and the misapplied competition of attraction. At first the young girl, with inherent instinct, properly expects that the attraction of her sex, as in the case of the birds she sees, and of all creatures, will be sufficient to insure her a mate. No mate offers. She attempts to increase her attraction, and spends all her money on adornment. Still she is unwed. Time advances; she buys bonnets, dresses, bangles, white and tan shoes; and, if comparatively poor, is, perhaps, deficient in underclothing; she is dressed far beyond her station, and therefore that of her probable husband, frightening such men from her side. She has only followed the teachings and dictates of the age we live in, and has striven to fulfil her function, and to become a married woman. Though a pretty girl, capable of making, and willing to be, an excellent wife, she is the alternate one who does not marry till after thirty, and perhaps not at all. She finally grows thin and atrophies—a wasted woman—and in future, should she be dependent on her own exertions, as are so many women in this age, a drudge to sustain her body in food, unselected and hopeless: and evolutionary disease, such as endometritis, may ensue.

Think what our views would be of Nature's arrangements, if every other female creature were desolate of a mate till half its sexual life were past. Yet such is our human state. The cowardice and selfishness of men of our time not to marry the girls, and work for them!

The second class of women compete for a living in two ways, mental and physical. If her work be mental, she is in special competition with men in large numbers, with the prejudice of custom against her; and, therefore, to attain her end, she must excel, which infers excessive work with its disadvantages to the female. If physical, she is liable to be affected by a combination of overwork, whether constant standing or bending, or mental strain, late hours, deficient sleep, of which she requires so much, defective meals, or unsuitable food or drink; and, in Australia, particularly by the drinking of excessive quantities of very hot strong tea as a nerve stimulant; whence result undue brain-waste, debility, loss of appetite, constipation, and spanæmia. With them, too, the wearing of stays and deficiency of marriage at suitable ages detract from healthy womanhood.

Evolving and similar causations of disease in such women present themselves to our notice, which may be shortly summed up as hereditary deficiency of development for parturition, deficiency of muscular power in parturition, largely induced by the wearing of stays and the use of tight binders afterwards, excessive child-bearing under the above unhealthy conditions, and superlactation.

It is not necessary to dilate on the influences of venereal diseases which have been in existence for ages, though they are now probably more extended and common from the presence in civilisation of the conditions previously mentioned, which have induced a largely extended state of promiscuity, which, it has been shown, is contrary to the inherent desire and custom of the human race.

Thus Nature maintains her law of limitation of population under all conditions of life; and in civilisation, among women, the influences of the exigencies of competition, limitation of, or delayed marriage with resulting disease, hereditary deficiency of sexual development, and the atrophic muscular state resulting from excessive cerebral culture at the expense of the physical and sexual, combined with civilised dress, decrease the ability of propagation; and hence a considerable proportion of civilised women as at present existing is in an abnormal state, and the diseases of woman are almost as universal as woman.

No doubt the waste in nature is enormous by destruction of the least fit, which fall a prey by deficiency of foresight, special sense, or physical development. But in civilisation woman is largely a waste product from no such causation.

Every man desires to be above that which he is, which is called ambition; and this among the masses chiefly without extra toil, but by the exertions of others, which is called discontent. When all have adopted this principle, and none work honestly, we will all starve, and woman will be promiscuous. When all men work honestly, a time which is assumed and appropriated by Socialist writers, nearly all, and probably all, women will marry, as in native races.

Amœboid forms divide for the production of the next generation; the highest female development desires to do so, which the moral law in our existent civilisation in many prevents. Single woman or single man is incomplete, which is the source of their mutual attraction to form a complete being—unity in duality.

It is the duty of man to marry, to work and support his wife and family. The influences of the defective civilisation in which we live, the aspiration of the masses for wealth with decreasing labour, causing strikes, and the consequent destruction of the capital on which their work subsists, the nomadic habits of the workmen on sheep stations, and of some miners, the contentions of European nations, necessitating enormous celibate armies and navies, combined with the social equality of woman to which evolution has raised her, have produced disproportion as between marriageable women and marrying men. Marriageable men are most numerous, but they are unwilling. A large proportion of women are deprived of the use of their strongest instinct—the production of the next generation—and an unnatural state is induced. We are but in an evolutionary, transitional stage, intermediate between partial incontinence and monogamy.

Deficiency of marriage is thus induced by strikes. The striker ceases to work and is idle, and the habit of doing nothing, and receiving a strike allowance for doing nothing, induces the habit of idleness; he becomes lazy; when the strike is over, he has lost the previous realisation of the necessity of work, and the desire. He is discontented and quarrelsome, and is not a pleasant person to employ; and is not remunerative, for he only half works. Being thus in poor circumstances, he ceases to be a desirably marriageable or a marrying man, being unwilling to undertake the honestly toilsome work of the support of a family.

The cost to the members of other unions, who support him in his idleness, impoverishes them, and renders them less able to undertake the expense of providing for a family, and their marriage rate is reduced.

The influence of a strike on the employer is to cause him to lose production of his ware, or the advantage of the market, or only at a great cost; his losses are great, and he is debarred from expending what should be his profits in increased employment of labour. Moreover, the business is driven elsewhere—perhaps to other countries. Thus less occupation is given to the masses; both employer and the masses, and all who cater for them, which is the rest of the population of the country, are impoverished. When, presently, the regularly recurring cycle of depression after excessive prosperity ensues, the employers and employed are unfit to meet it by loss of savings, all are more or less unemployed, and misery and starvation result. If people will not work and save when they can, they cannot, perhaps, when they would. Thus all the men of the country are less capable of marrying and supporting their families.

We, the professional classes, as most successful men, work from fourteen to sixteen hours a day, and even in the remaining eight or ten hours are often disturbed by anxiety and work. This book is written up to the earlier hours of the day, with the jar of the telephone disquieting anxious nerves about serious cases, which are not always remunerative. What has labour of this?

After strikes there remains the undesirability of instituting new industries on the part of those who, by foresight, hard work, and mental anxiety, have attained to the saving of money, from the practical certainty of future strikes.

The influence of State-socialism, as exemplified in Victoria, and indeed in Australasia, has induced the expectation that the State is to be looked to for relief, by giving work moderately remunerative or unproductive to the State, in every condition of depression. The result has been the burdening of the taxpayers, the repression of the old British energy, the pauperisation of the country, and deficiency of marriage. Happily this is now being to some extent resisted. Yet in byways it is continued; thus the condition of mind and self-helplessness at which we have arrived has lately been exemplified in the case of men said to be unemployed and starving. The State provided them with a steamer, professional fishermen as instructors, boats, nets, provisions, tents, and tobacco; they were conveyed to an island about which the sea abounded in fish. They found that the hours of working were dependent on the habits of the fish, and were not necessarily within the prescribed eight hours, and that it was compulsory in drawing the nets to get wet. To these inconveniences they objected, and struck; and the project, which cost at least 200*l.*, was a failure. What of Socialism? and what sort of men would they be, as associates, with whom to be shipwrecked on a desert island? This was not the class of men who colonised America and Australia in the face of hostile aborigines. Has the race really degenerated? Has the British spirit fled? Or are the people only lazy and spoiled? Man must work, or marriage is deficient or a failure.

In old countries no one can deny that the population is dense, that changes occur in the conditions of work, that competition may be too keen, and difficulty of living acute. Thus to the square mile in England and Wales there are 503 persons; in Ireland, 144; and in Scotland, 138. But in new countries, such as the enormous territories of Australasia, there are in Victoria only 13 to the square mile; in New Zealand, 6; in Tasmania, 5½; in New South Wales, 3½; in Queensland, ½ a person; and in the other colonies of Australasia, less; in such territories, with their liberal land laws and preservation of order, there is opening enough for men to work to support themselves and their families, and to provide all that is necessary.

In Victoria, a country teeming with gold and mineral, pastoral and agricultural resources, with a marvellous climate such as cannot be elsewhere found, there is a large midwifery hospital; extensive arrangements for the care of babies; education, free, secular, and compulsory; general hospitals in all the large cities and in most of the small towns; a hospital for incurables; a benevolent asylum; and an enormous private charity. Does the working man also require a permanent wet nurse instead of a wife? Let him work honestly, and let each man be individually self-provident, as we all must be, who would be successful and independent; and thus men will marry.

In European countries non-marriage is accounted for, not only by the influence of strikes, but also by the enormous bodies of men removed from remunerative work by standing armies and navies, and their subsequent comparative unfitness for regular work. Should war occur, the mortality diminishes the numbers of men. Non-combatants have to provide munitions of war, and for these non-earning men, whose requirements would be much larger were they by ordinary work earning a greater income.

Hence deficiency of marrying men.

When armies of celibate men, discontent of the masses, and strikes cease to be, the proportion of the sexes will be equal, and marriage will be universal. If we would marry and provide well for our wives and families, we must work well. If we require additional luxuries, we must necessarily work harder; not less, as is now the contention and the practice. Advancement comes by individual improvement in men's work; not by idleness and fomenting of discontent. Meanwhile non-marriage and illegitimacy increase, and women suffer.

Has every woman a right to the exercise of her propagative powers in marriage? Is she justified in demanding the right of transmitting to children those qualities which have gradually evolved in her during myriads of generations, and have rendered her in some way distinct from every other woman? She has as much right as a man; just as with honest and sufficient work both have an inherent right, by the fact of their birth, to a roof and sustaining food and clothing, which are for the satisfaction of other senses and needs of the body. Man and woman fail in their health and completeness of perfection, if these demands be not supplied. In nature every female creature has the use of her sexual organs. In civilisation also, except in the case of a few animals, of whom the fittest are selected by man; and women, whom the males do not marry partly from disinclination, partly from their refusal of occupation, and largely for the pecuniary reasons which they themselves, not women, have created.

The condition of women and marriage continues to evolve. The present appearance is that a large number cannot marry, and must be unsexualised; in this respect resembling the condition of certain republics of ants.

The future of the cultured class of women, under conditions of high mental development and decreased hereditary and individual sexual instinct and power, is a most interesting study.

Woman's resulting evolutionary diseases may now be considered.

CHAPTER III.

ON THE DEVELOPMENT OF THE FEMALE SEXUAL ORGANS.

MINOT, in his 'Human Embryology,' thus describes the embryonic development of the female sexual organs:—

'The Fallopian tubes, uterus, and vagina are developed from the Müllerian ducts; but it is to be remembered that, strictly speaking, the epithelial Müllerian ducts produce only the epithelial lining of the adult tuba, uterus, and vagina, and that the connective tissue, which forms the thickest part of the walls in the adult, is developed from the mesenchyma of the urogenital fold.

'*The Fallopian Tube.*—The fullest account given is that by Mihalcovics. The tube is developed from that part of the Müllerian duct which runs along the Wolffian body, and is not included in the genital cord. The epithelium becomes much thinner except in the funnel, where it retains its cylindrical character. Later, the mesenchyma begins to condense around the duct, thus initiating the development of the connective-tissue coats of the tube; shortly after the mesenchyma wall begins to develop, the Müllerian funnel becomes larger, and its surface thrown into folds, the anlages[1] of the fimbriæ. As the Wolffian body atrophies and changes into the transverse broad ligament, the Fallopian tube appears more and more at the edge of the urogenital fold, and changes its primitive longitudinal course to a transverse one, the primitive course being retained until the end of the third month. After the third month the tube elongates faster than the broad ligament, and consequently assumes a sinuous course. By the sixth or seventh month the definite transverse position is attained. By the fourth month the folds at the ovarian end of the tube are well developed, but the thick dense mesenchymal coat is not yet divided into muscular and adventitial layers; at this time the small Wolffian duct still persists, though later it usually disappears.

'*Uterus and Vagina.*—The genital cord contains four ducts, the two laterally placed Wolffian ducts, and the two Müllerian ducts, which lie nearer the median line and more dorsally. In man the genital cord is the anlage of both the uterus and the vagina; within the cord the two Müllerian ducts unite in the median line, forming a single canal; the cephalad portion of this canal becomes dilated into the uterine cavity, and its epithelium becomes the lining of the uterus; the caudad portion develops into the vagina; the mesodermic tissue of the cord is converted into the muscular and connective-tissue layers of the adult passages. Finally, the Wolffian ducts atrophy, usually completely, but they sometimes persist to a greater or less extent as rudiments, known as Gärtner's canals, which lie on one or both sides in the walls of the uterus.

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[1] *Anlage*, a German word, meaning 'foundation' or 'precursor.'

'The genital cord extends by the fourth month from the insertion of the Hunterian or round ligaments to the urogenital sinus. The Müller's ducts fuse in the median line between these two points, except at the upper end; that is to say, the ducts diverge, after their complete fusion, a little below the round ligaments, and these divergent portions become the horns of the uterus. The fusion commences at the end of the eighth week, about two-thirds of the way down from the cephalad end of the cord to the urogenital sinus, and progresses from that point both upward and downward, but the upper two-thirds are united before the lower extremities. The process is completed according to Fürst by the end of the third month. The single canal thus produced is known as the genital canal, or better, as the utero-vaginal canal. A failure of the lower ends to fuse leaves two openings (double or biperforate hymen).

'W. Nagel has pointed out that the genital cord becomes bent very early in the human embryo, so as to divide the cord into an upper or uterine limb, which runs longitudinally between the bladder and rectum. At the end of the third month, the simple epithelium lining the cavity of the canal changes its character in its lower third, becoming there a stratified pavement epithelium, which passes over very gradually into the cylindrical epithelium of the upper portion. The change progresses upward, and as it advances the demarcation between the two kinds of epithelium becomes sharper. By the eighth month the passage is abrupt and occurs at the middle of the canal.

The stratified epithelium lines the vaginal limb, which occupies half the genital cord at birth; after birth the uterine limb enlarges more rapidly than the vaginal.

'*Vagina.*—During the fourth month the vaginal limb expands laterally and becomes flattened dorso-ventrally. Its two epithelial surfaces meet and grow together, closing the lumen of the vagina and forming an epithelial lamina, the cells of which now commence a rapid proliferation, which thickens the vagina and forces down its lower end, thus forming the hymen, because the actual diameter of the vagina where it is connected with the sinus does not share in the general dilatation. The epithelial plate of the vagina has two features requiring special mention. 1. A short distance above the sinus it is T-shaped in transverse section; the two side-portions are probably remnants of the Wolffian ducts which unite with the vagina at this point. In this connection it is significant to observe that in the cow the persistent ducts of Gärtner (Wolff) open into the vagina; the question arises whether this connection is not general in the placentalia. 2. At its upper end the lamina forms a cup-shaped outgrowth, which embraces the lower end of the uterus. Everywhere between the two points thus specialised the lamina is crescentic in section, the concavity facing the back. The anlages of the rugæ of the vagina appear during the end of the fourth month as budding ridges on the outside of the lamina. Finally, the permanent lumen of the vagina begins to appear during the sixth month, and is formed by the breaking down of the central cells of the lamina. This process penetrates the cup-shaped outgrowth just described, so that the lower end of the uterus protrudes into the vagina, in consequence, be it remarked, of the vagina growing up around the extremity of the uterus. The stratified epithelium often extends a short distance inside the os uteri.

'*Uterus.*—The cavity of the uterine limb is always open, and its epithelium composed of a single layer of cells, which diminish in height from fifty μ (third month) to twenty-five μ (eighth month). A short time before birth the epithelium of the cervix develops into beaker cells. This transformation has been well described by Moricke. The cells increase in length, and the nuclei move toward the base of the layer; the upper portion becomes clear, and no longer stains with picrocarmine owing to the formation of mucus. These cells secrete the mucous plug which fills the cervix at birth. As far as ascertained, there are no cilia in the fœtal uterus. The development of the arbor vitæ of the uterus commences at the end of the fourth month with the appearance of the main stems (rachis), which extend from a little above the future os nearly to the fundus. Their disposition is asymmetrical, the two stems of the posterior wall lying to the left, of the anterior wall to the right; hence the cavity of the uterus is somewhat S-shaped in section. The arbor vitæ is merely a set of folds of the uterine mucosa.

'The mesoderm of the genital cord differentiates very slowly. The first noticeable change is the increased vascularity of the part next the epithelium; this vascular layer becomes the mucosa, and the tissue outside it the muscularis. The latter does not become distinct histologically until the close of the fifth month. The muscular fibres are very irregularly disposed; however, the trend of the inner ones is circular, of the outer longitudinal.

'The glands of the uterus and vagina do not appear until after birth, except in the cervix uteri, the glands of which arise the middle of the fifth month.

'The round or Hunter's ligaments mark in all mammals the division between the Fallopian and the uterine portion of Müller's ducts. In man the whole of the uterine division is included in the genital cord, and participates in the formation of the single median uterus.

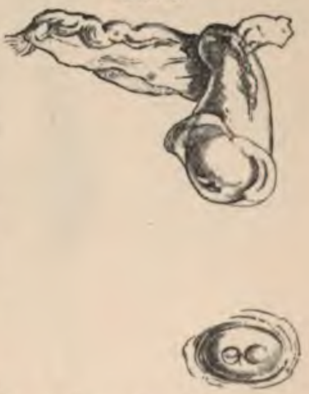
'*Hymen.*—The hymen is said to be the homologue of the verum montanum of the male urethra. It appears about the beginning of the fifth month as a transverse ridge situated on the central side of the vestibular end of the vagina, and projecting into the urogenital sinus (vestibulum). At this time the vagina begins its dilatation, and as it widens it appears to force down the hymen, which is thereby rendered more protuberant. The hymen is a thin non-muscular fold covered on one surface by the epithelium of the sinus, and on the other by the epithelium of the vagina, the latter being much thicker than the former. The hymen grows rapidly after its first appearance. When, as may happen by arrest of development, the lower ends of the Müllerian ducts do not fuse, the hymen presents two orifices leading into a single vagina.'

The study of a number of uteri at birth or subsequent early ages at once shows that a great difference exists in their strength of development in every part, and that no defined general laws of expectation can be drawn, except that the child strongly developed at birth will probably have a strongly developed uterus, and the child feebly developed at birth a feebly developed uterus; but not by any means necessarily thus. But no such inference can be drawn as to the state of the os, unless it be that in such large uteri the os is liable to be over-large with cervical eversion and villous appearance; and the small uterus to have a small os, with or without villous edges, and a feeble development at the junction of the cervix with the body; but the well-developed body and junction may have a conical cervix, and a very small opening.

The most apparent condition in the uterus at birth is the large size of the cervix, and the small size of the body, which is little more than the fundus; but these vary according to the size of the child and of her uterus; and such is the variation that it is apparently useless to give in figures an average length of either with reference to an individual.

The following figures, which are drawn to exact size, and descriptions exhibit the various grades of development found in children at birth.

FIG. 4.

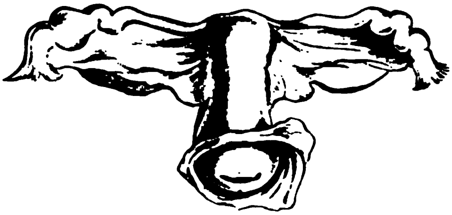


Uterus of premature fœtus at seven months; granular prominences are at the very small opening. The body is slightly anteflexed, and there is a tendency to the formation of an angle of flexion. Uterus is $\frac{7}{8}$ inch long. Right broad ligament removed.

1. In a child born at the seventh month the cervix is well developed in length, but otherwise is small in size; the body is very small; the junction is feeble, and anteflexion is probable in development; the opening is small with an apparently granular prominence, and would probably become obstructed with granular edges.

2. In a child born at the seventh month the cervix and body are well developed; the junction of the cervix and body is strong, and there is an anterior curvature without flexion; the os is a patulous slit without eversion; there is no cervical mucous plug.

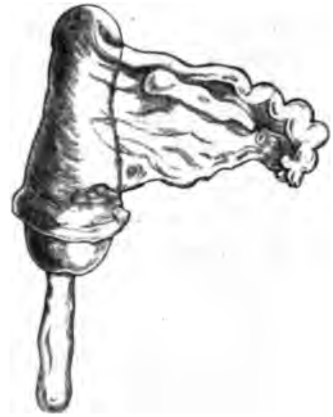
FIG. 5.



Uterus of seven months' child which lived two weeks. The os is a slit without gaping, and there are no exposed granulations. The cervix and body are nicely developed, and there is no tendency to flexion.

3. At term, with the same conditions of the body and cervix as described above but much larger, the opening is larger in size; the cervical membrane is puffed and everted, and a strong cohesive mucous plug protrudes.

FIG. 6.

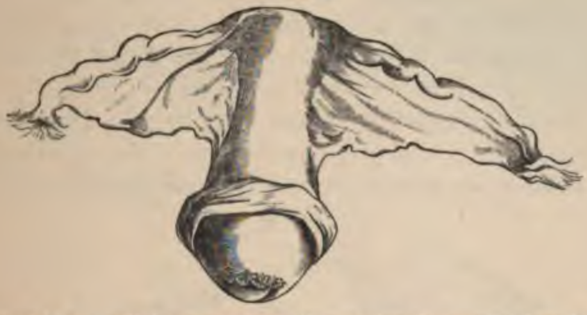


Uterus at term, showing long cervical cohesive mucus. The opening is granular and gaping. The cervico-corporeal junction is strong, and there is no tendency to flexion.

4. With a larger development of cervix and body, the os is larger and gapes, showing the cervical rugæ, and the line of junction of the vaginal stratified with the cervical cylindrical epithelium is at the outer edges of the lips, the cervical open-

ing appearing granular; a very cohesive, opaque, cervical mucous plug protrudes.

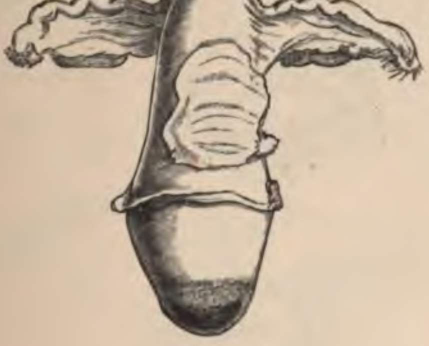
FIG. 7.



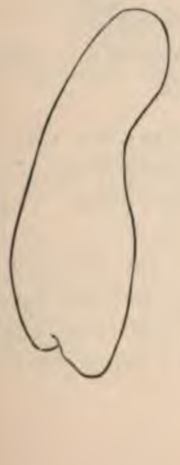
Uterus at term, with large opening with granular edges and a plug of very cohesive semi-opaque mucus. Length, 1½ inch. The cervico-corporeal junction is strong.

5. The cervix is very largely developed. The opening is

FIG. 8.



Uterus at term of well-developed child weighing 8 lbs. The cervix is very large and strong. The opening is large; the concavity between the lips very delicately granular. There is no cervical mucous plug. The bladder attachment is shown.

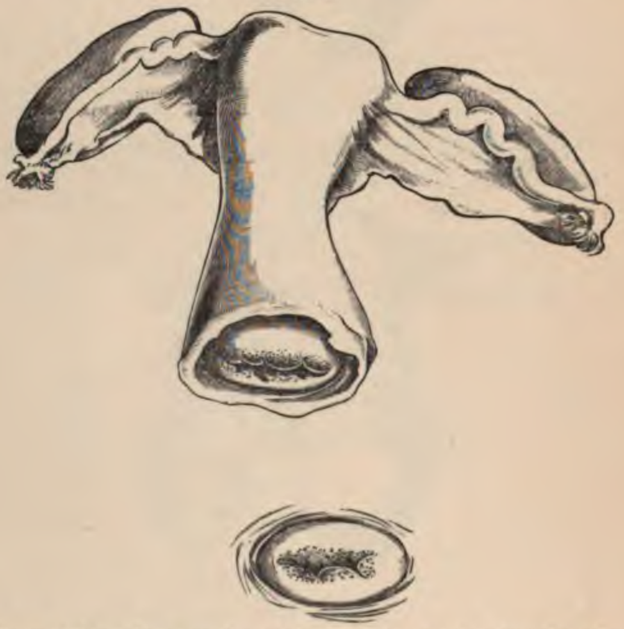


Lateral diagram, showing slight bend of body, but the cervico-corporeal junction is very strong.

large, pale, and with care, or with a magnifying glass, the concavity of the os is seen to be granular, the line of division between the cervical and the vaginal epithelium being very clearly defined on the projecting edge of the lips; there is no cervical plug; the body is strong; the slight forward bend exists, but there is no tendency to flexion.

6. The cervix and body are very largely developed, the body being as long and large as the cervix, the combined form being that of an hour-glass, and the junction is very strong; there is slight anterior curvature; the opening is very large; the cervical membrane in the canal is apparently granular, and there is a slight cervical mucous plug. The ovaries are unusually large.

FIG. 9.

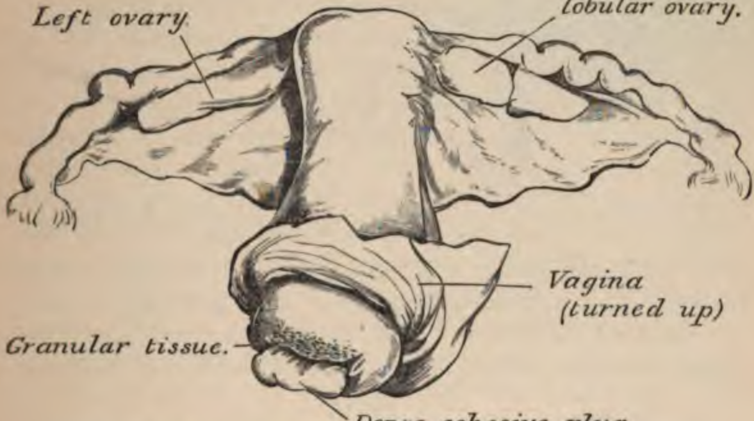


Uterus at term, large opening with rounded projecting granular edges. The body is 1 inch by ¾ inch; the cervix ¾ inch by 1 inch; the os ½ inch long; the ovaries 1¼ inch by ½ inch.

7. The cervix and body are strongly developed; the junction is exceedingly strong and the anterior curvature is slight; the opening is exceedingly large, gaping nearly to the breadth of the face of the cervix; the exposed cervical membrane

and the cervico-vaginal edges are apparently highly granular; and a strong cohesive mucous plug protrudes.

FIG. 10.

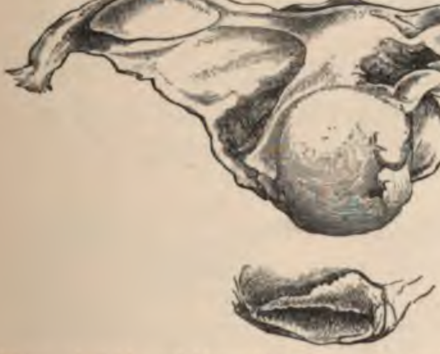


Posterior view of uterus of stillborn child weighing 10½ lbs., showing large os plugged with dense mucus and granular tissue on the vaginal surface of the cervix. The ovaries are lobulated, especially the right.

Of the uteri with deficiency of development:—

8. In a child aged fifteen months the cervix is well developed in length, less so in size; the body proportionately

FIG. 11.



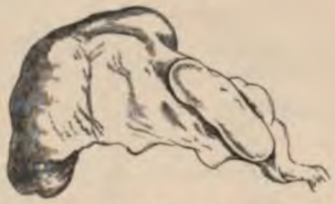
Os of the uterus, enlarged one-third.

Uterus of child aged 15 months, with feebly developed body and large os with granular edges.

is rather feeble; the junction is weak, and there is a strong tendency to anteflexion; the os is very large, and the canal and edges appear granular.

9. In a child aged fifteen months the cervix is well developed in length, less so in general size; the body is very feeble; the junction is exceedingly weak, and anteflexion is certain; the os is large, with an apparently granular canal and edges.

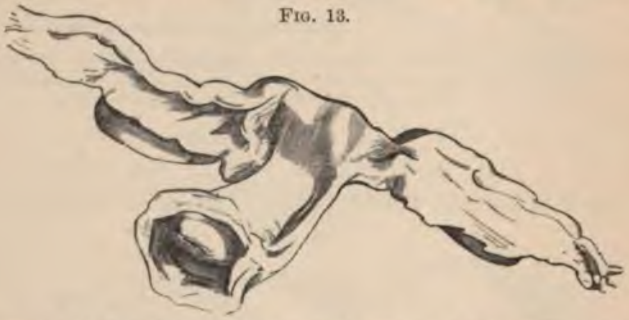
FIG. 12.



Side view of anteflexed uterus of child aged 15 months, with feebly developed body and large os with granular edges.

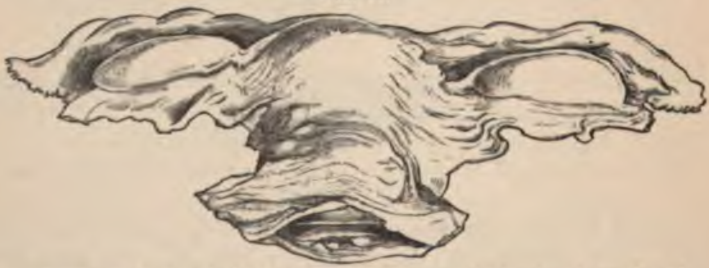
10. In a child aged fifteen months, the cervix and body have a moderate development; the junction is only moderately strong, and there is a tendency for the fundus to fall forwards; the opening is small; there is no cervical plug.

FIG. 13.



Uterus of child aged 15 months, showing a small os, feebly developed body, and tendency to anteflexion.

FIG. 14.



Uterus and ovaries of child of 8 years of age, weakly developed junction of body with cervix, with tendency to anteflexion and small opening.

11. In a child aged eight, the cervix and body are well developed in length and proportion; but the junction is weak, and there is a strong tendency to anteflexion; the opening is small, and there is no cervical plug.

In all these cases the cervix is, proportionately to the body, larger and more developed; but the body and junction range from the exceedingly strong to the exceedingly feeble; the body varies, but not necessarily in proportion to the size of the child at this period. The strength of the junction is not in proportion to the size of the cervix, in comparison with that of the body, but to the strength of development of the whole uterus. But the opening is generally in proportion to the size of the uterus, but is not necessarily normal in an otherwise well-formed uterus. Thus, in a small or moderately sized uterus the os may be normal or small; with a large uterus the os may be large and granular. In very many uteri with largely developed openings there is a strong cohesive plug, and apparently congenital cervicitis; seldom when it is small.

Since in the largest and best-formed uteri the cervical opening is at birth so large and deep as to expose the cervical tissue, and that this opening is so much larger than we find in the well-formed, full-grown, healthy uterus, it may be assumed that in the development between birth and puberty the circular muscular fibres at the lower part of the cervix acquire a contracting, and later probably an alternating dilating power, which, it may be, is referable to the advantage of a sucking action for the drawing in of the semen in connection. Thereby the granular cervical tissue seen at birth in strong development is, later, protected within the canal by a sphincterial action at the lower extremity of the cervix. Immediate pregnancy in such healthy women is certain; and this we find to occur in many on the first opportunity.

With strong development of the uterus in every part except the deficient size of the opening, these circular muscular fibres by their contraction accentuate the closure, and render escape of secretions and entrance of semen difficult; the sexual instinct being normal, in the absence of marriage congestive conditions result; with marriage also, and pregnancy is improbable.

Should the development of the opening be deficient, as is common in the congenitally feebly developed uterus, where sexual impulse is usually absent, the circular muscular fibres constricting the orifice render it additionally small for the performance of its functions. But sexual feeling also being deficient or absent, the element of congestion is absent. This condition of the opening may be observed in all stages of the feebly developed uterus; so that in a woman after puberty it may be somewhat smaller than the normal, minute yet patent, until finally it is pinhole, and the mucous sides touch. To these congenital conditions evolutionary inflammatory states are added by the forces applied under the circumstances of life of the individual. Among native races the trunk of the woman is generally free, and in work there is no unnatural resistance to the requirements of position or of force. In civilisation the exigencies of position, as of stooping in study, and with muscular exertion, as in treadle-sewing-machine work, combined with compression of the body by stays, must necessarily affect normal development.

While the uterus, and particularly the corporeal part, grows through the earlier years of life, in its vascularity it rushes into activity with the commencement of ovulation; since from that time it may at any moment be called upon to exercise its functions of receiving and developing the future generation. Thus from that moment sexual activity effects its influence not only on the body, but also on the mind and manners of the girl toward the end of the production and vitality of the next generation, and the desire of attraction of the male animates her. It is well known that coloured beads attract the attention and desire of the women of native races, and hence evolutionary love of dress and of fashion in the civilised; it is an evolution in attraction from love of colour for personal adornment. The females of the lower creatures do not show this tendency, for their work of propagation is effected by the existence of their sex; it is the male who has to attract, and is therefore the more showy and beautiful.

In civilisation the desire of attraction is thus combined with the fashion of our dress, which habitually necessitates the abnormal compression of the body at, or shortly after, puberty by stays, whereby congestive conditions are produced; and it is not strange that in strongly sexual natures the cervical circular muscular fibres should by this congestion of civilisation fail to contract and enclose the cervical canal at the outer opening, so that it continues everted, as at birth, and becomes by exposure and vaginal friction inflamed; or that, in strong congenital formation, subsequent mental development, at the expense of the sexual, may arrest the contraction of the lower circular muscular fibres, and the original cervical exposure persist with frictional influences.

But the development of the mind may by heredity be more powerful than sexual instinct, and the moderately developed uterus be passive, being subservient to the intellectuality. In case of marriage there is no sexual feeling, yet the ovules may be readily impregnated, for the lumen of the genital canal is free, and ovulation occurs.

In the feebly developed uterus with the small opening, the hereditary desire of attraction may continue, and the woman devote herself to dress and fashion, while her organs are incapable of accepting the successful result of her attraction, and her feeling is of repugnance. She is deficiently developed in sexual power; and these conditions may obtain, when the arrest in development extends to amenorrhœa, from absence of the ovaries with a minute uterus. Yet her womanly form and appearance may be complete, from their excellent growth after birth.

In the examples previously given it will be noticed that a very small opening and a distinct tendency to anteflexion are coincident with a deficient development of the uterine tissue; and thus the vaginal cervix is frequently small and, perhaps, conical.

Minot gives the following proportions of the vagina and uterus:—

Supposed Age of Child.	Vagina. Length.	Uterus. Length.
8 days	10 mm.	25 mm.
4 months	30 "	20 "
3 years	40 "	25 "

This, however, is evidently referable to various degrees of development, for the uteri of children of equal congenital development cannot have decreased one-fifth of their length in the first four months; and accurate proportions of similar uteri are required. However, the relative increase of the vagina to the uterus is indicated as in the proportion of 1 for the vagina to 2½ for the uterus at the age of 8 days, of 3 to 2 at 4 months, and 4 to 2½ at 3 years. In my experience the large, well-formed uterus is at birth as long as the vagina; the feeble uterus less in proportion to its deficiency of development.

Of the uterus three-fourths are cervix, and one-fourth is body and fundus.

At birth the os is at the level of the upper border of the symphisis pubis; the fundus is at the level of one-fourth of the umbilico-pubic space from the umbilicus.

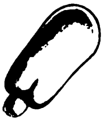
The rectum containing meconium supports it posteriorly. The small intestines lying over the fundus are empty. The bladder lies in front of it, and, when full, forms a rounded body which pushes the uterus backwards, retroposing it, and supports it anteriorly; and the summits of the bladder and of the uterus are on a level. When the urine is passed the bladder descends, and the uterus follows and rests on it. The uterus is thus well held in a position of slight anterior concavity. But in the event of the uterine tissue being feeble, it may be that the fundus falls forwards, and readily angles at the cervico-corporeal junction.

As growth proceeds the pelvis develops much more proportionately than the uterus, so that at puberty the fundus is at or below the level of the symphisis. Meanwhile the body of the uterus has grown in every direction; and the cervix also, but much less in proportion to the body, and particularly to the growth of the pelvis.

Later, the full bladder rises above the level of the fundus uteri. Should the uterus be well developed, of firm tissue, and be well nourished, it maintains its position of slight anterior curvature; but if of weakly structure the tissue at the isthmus may yield, so that on the emptying of the bladder the fundus falls and rests on the cervix, the bladder refilling compresses the fundus in this position, and permanent anteflexion results. This is facilitated by the influence of the intestines, which in feeble children are particularly liable to be overdistended with gas and deficiently digested food; accentuated by the weight of the clothes of civilisation pressing on the prominent abdomen, which is absent in the native races, bearing down the fundus toward the horizontal position; and by fæces in the lower rectum, retained through the resulting constipation, pressing forward the comparatively large cervix, which occupies a lower plane. The above premises infer a feeble development throughout the uterus, and it will be found that usually the virginal anteflexion is of a small organ with a small os. It is not a normal anteflexed fœtal uterus, but the anteflexed uterus of a feeble development, which is usually associated with sterility.

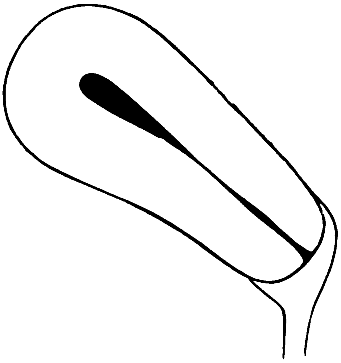
At the age of twenty and upwards, the strong or feeble development in appearance and figure of the woman is no necessary guide to the state of her uterus, for the average law of similarity may not maintain, and the weakly infant with a feeble uterus may have developed as a well-grown woman, but with a feeble uterus. The vagina may be atresic, the uterus and

FIG. 15.



Deficiently developed uterus with prominent vesicle at os, apparently the cervical secretion with atresia; the vagina was atresic, in a girl, aged 18, with excellent womanly development, but amenorrhœa. (Full size.)

FIG. 16



Section of retroverted fixed uterus; the canal is 1½ inch long from arrest of development in an otherwise exceedingly well-developed woman of 24, who never menstruated. Desire of children was strong.

ovaries have been arrested in development, and the woman may be the subject of amenorrhœa; yet the breasts may be large, the hips broad, the pubic hair vigorous, and the female appearance and manner marked. Thus some perfectly formed and well-grown women have uteri so deficiently developed that they do not ovulate (fig. 16); in others the opening is so small that pregnancy does not occur; and should it by chance do so, perhaps, after years of marriage or an operation, the cervix is incapable of normal dilatation, and lacerates with evolutionary disease.

Similarly as to intermediate states, which, untreated, necessarily entail sterility. Conversely, the girl of feeble frame and deficient vitality may have a thoroughly well-formed uterus; and such we see bearing many children in a normal manner without uterine injury, whose system breaks down under the drain and strain of pregnancy and lactation.

CHAPTER IV.

ENDOMETRITIS.

Definition.—Endometritis is an evolutionary inflammation of the membrane lining the uterus, and, though frequently affecting this structure throughout the organ, may be of the cervix only, or of the body, the condition differing in accordance with the variation in the anatomy of these parts, and the manner of the causation. This is the central essential disease in evolutionary pathology, is exceedingly common, and is worthy of the utmost consideration.

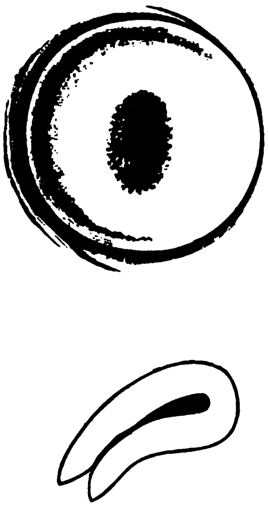
CERVICITIS.

Definition.—In this locality there is an inflammation of the structures lining the cervix. The glands, which are the most prominent feature, secrete a mucus like the uncooked white of egg, clear or opaque, cohesive, occupying the canal, or protruding from it in a string, or *en masse*, very difficult to remove or to divide, and continuous into the tubes of the glands themselves.

Condition.—The lining membrane—that is, the papillæ—of the lower half of the cervix and perhaps of the vaginal portion, the pavement epithelium of the lower third and perhaps of the vaginal part, the mucous follicular glands, and less frequently the columnar and ciliated epithelium of the upper two-thirds, are inflamed, and pour out a secretion of an exaggerated quantity and quality of cohesion. If the opening of the uterus be unduly small, much of this mucus may be pent up in the canal, and escape on slight dilatation; the outer opening may be too minute to permit extrusion of the inflamed membrane; or the latter may fill it, and the granulations be continued on to the vaginal cervix to a greater or less extent, resembling a rubbed raspberry. The inner os may also be unduly small, when, with the stenosis of the outer opening, the cervical canal is distended by the glairy cervical secretion.

Should there be a large opening, it may be funnel-shaped, and the lining membrane velvety, thickened and granular; or soft, raw-beef faces, at the edges more or less coated with vaginal pavement epithelium, may be in apposition to each other, or may be readily approximated; or one lip may present this condition, and the other be normal; or a dense granular face may be flat or convex, perhaps with a lateral groove, or with stellate grooves, in the centre of which is the canal. From the canal issues a rope of densely cohesive mucus, which may collect in a mass, or lie over the face; this mucus is generally clear, and occasionally opaque. On the face, cysts of the size of shot may be felt, or from the size of a sago granule to that of a hazel-nut may be seen as well as felt. It is an exceedingly common affection.

FIG. 17.



Virginal large gaping opening. The epithelium is absent from and outside the edges of the lips. The face is much congested. There is menorrhagia. The development is very strong.

Causes.—The causes are:

1. Congenital or virginal;
2. Parous;
3. Induced by sexual excess or gonorrhœa;
4. Operative.

Mode of Causation.—1. In the congenital or virginal state

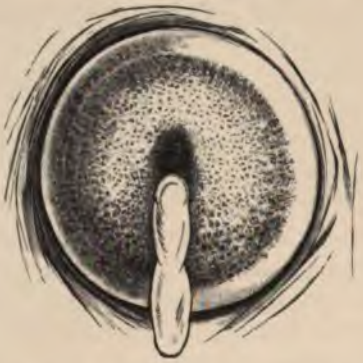
(*a*) The outer os may be normal,
(*b*) Excessive in size, or
(*c*) Unduly small.

(*a*) It is not rare to find in virgins of twenty-five and upwards, and perhaps earlier, a normal opening, but a congested face and cervicitis, which has resulted from unsatisfied sexual instinct. The mind has run on marital functions, the organs are in a constant state of congestion, and the secretions are increased in quantity. By the persistence of such emotions, the vessels of the mucous membrane gradually become dilated, and a congestive action ensues, which results in an inflamed state of the glands, with thickening and slight eversion of the os. This is generally of only one lip, and is apparently to be referred to its friction against the vagina, which the other lip escapes. In some cases, the granular state thus induced extends to some distance on the face of the cervix, when the tissue becomes hyperplastic. The quantity of discharge is not usually large; for, the opening being normal, there is always sufficient room for drainage, unless excessive hyperplasia from friction should occur, and true eversion is never extensive, the muscular contraction at the opening being efficient.

(*b*) When the opening is of excessive size, the cervical membrane is at birth exposed, everted, perhaps with granular edges, and the cohesive mucus dangles as a rope from the canal, or lies about the face. From friction against the vaginal rugæ, areolar hyperplasia ensues, and the higher tissue bears down and fills the lower opening, which may thus be greatly dilated, so that the centre of the face is angrily granular, the lumen is filled by the eversion, and there may be no patulous gaping of the opening; and if there be, it is blocked by the cervicitic mucous plug.

The cysts are formed by the gradual increase of the areolar hyperplasia about the site of greater irritation by vaginal friction, which is at the surface of the granular face; presently, by pressure, it constricts the orifices of the gland ducts, and later closes them. The secretion, continuing to be formed by

FIG. 18.



Virginal largely developed uterus, with large opening and long cohesive plug of cervical mucus, with face of extensive rubbed raspberry granulations. There is left pyo-salpinx, discharging through the bladder. The hymen is tight.

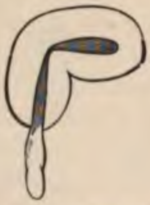
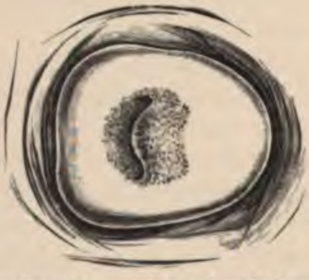


Diagram of uterus. The body is anteflexed, the cervix perpendicular.

FIG. 19.

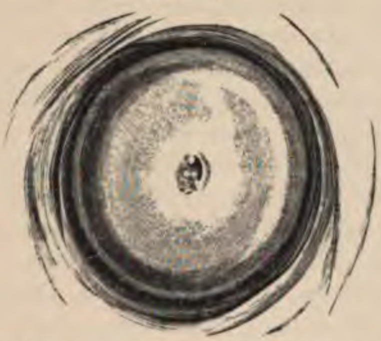


Virginal well-developed os with cervicitis, and rubbed raspberry granulations around the edges of the lips, and areolar hyperplasia of the anterior lip, causing compression of the lips by its overlapping.

the gland cells, accumulates and distends the ducts, and cysts result. The pressure on the gland cells is now continuous, and they atrophy and cease, or almost cease, to secrete. These cysts may be few in number and large in size, or in large quantity and of various sizes. They are most commonly found in the parous causation.

(*c*) When the outer opening is unduly small, the uterus otherwise normal, as well as the sexual feeling, the secretions escape with difficulty through the external opening, the cervical mucous membrane is consequently irritated and inflamed, and its glands secrete an increased quantity of cohesive mucus. While this increased secretion can the less readily escape by the outer opening from its increased stenosis, there is no marked distention of the cervical canal, for it can be relieved by the mucus passing upwards through the inner os, with the result that such dilatation as may occur is of the canal of the body.

FIG. 20.



Virginal well-developed uterus, but very small opening, with everted ranular tissue of posterior lip, filling the opening. Anteflexion of ody, cervix slightly depressed.

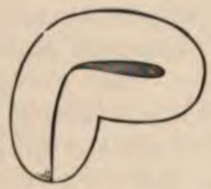


Diagram of anteflexed body and cervix.

This additional puffing of the membrane still further blocks the small opening, and the difficulty of escape is increased as well as the inflammation, so that the vaginal cervix appears permanently congested; and if punctured, oozing of blood may be continuous, and become of serious extent. The granular state of the slight extrusion through the small opening may be continued on to the vaginal cervix, and, under the influence of friction against the vaginal rugæ, the face, or part of the face, may appear like a rubbed raspberry. Connective tissue hyperplasia then takes place, the exposed tissue is dense and inflamed, and the opening is thus the more compressed and stenosed. This is the more readily effected under the influence of sexual excitement without pregnancy. The sexual feeling is normal. The pressure downwards on the small opening is liable to render this cervix conical, and its face small by irritable contraction of its circular muscular fibres; when drainage is made free, the part becomes of normal size, and shows how well developed it really is.

Another condition of this state is where, the external opening being small, the cervix is conical, and the body, junction, and sexual feeling are feeble in development. The circulation is deficient; and, while the obstruction to drainage exists, the tendency is to atrophy. The lining membrane may be seen to be irritable or granular, and there is some discharge; but this dysmenorrhœa leads to anæmia, and towards or to amenorrhœa.

But if the inner os be also in a state of stenosis, the cervical mucus cannot escape upwards through it, collects in the cervical canal, and dilates it. A permanent pressure is thus exerted on the secreting cells and ducts of the glands, and they are flattened; thus they presently atrophy, and the lining membrane becomes dense, and usually the face is pale and lax.

2. In the parous, laceration is the common cause. It generally supervenes on one of the two preceding deficiencies of development, or on the normal os with connective tissue hyperplasia as before mentioned, which prevents normal dilatation in miscarriage or labour, so that the hyperplastic tissue splits instead of stretching. This may occur with or without the use of the forceps. The raw surfaces are thereupon separated by

the retractive influence of the uterine muscular fibres and by the lochia, and do not unite by first intention, though there may be some gradual healing and contraction from the edges and in the angles, which may completely coat the raw surfaces, and by contraction close and render atrophic the exposed glands and their ducts; but usually a chronic inflammatory action occurs, in which the exposed cervical glands and areolar tissue are implicated, the result being that the face is more or less composed of the everted, inflamed, granular, hyperplastic, cervical tissue. Cyst degeneration is common, as previously related.

3. Sexual excess induces a frequently congested state of the vessels, whereby the venous capillaries become engorged and varicose, so that the glandular secretion is at first increased in quantity, and subsequently altered in quality, by a chronic inflammation of the glands. Pregnancy should have occurred, when the normal development of the ovum would have attracted the nutrition; but should this have been mechanically prevented, or not have occurred from previous cervicitis, from absence of sufficiently early marriage, or by a congenital deficiency of formation, or from the excess or promiscuity of prostitutes, the cervical inflammation may become determined.

By gonorrhœa the mode of causation is that the gonococcus, having travelled into the cervical canal from the vagina, produces an inflammation of the lining membrane, and especially of the glands, and a thin, dirty, ichorous discharge, and, perhaps, subsequently, the chronic cervical mucus, which is the more determined, if the opening be small, or narrowed by previous connective tissue hyperplasia, whereby the free drainage of secretions is limited.

4. Cervicitis necessarily follows certain operations, such as metrotomy, since cutting through the whole thickness of the cervico-vaginal wall exposes the cervical canal, and creates the condition of laceration of the cervix, or in the operation by scissors, which may divide all the structures nearly or quite to the cervico-vaginal junction. Exactly the same forces operate, and the same pathological actions ensue as after parous laceration; but with a better expectation of the healing of the faces in apposition, for separation by the lochia and the need of involution

are absent; and a chronic cervicitis persists from exposure of the cervical glands and divided tissues to vaginal friction, and to its acid secretion, until the normal condition is restored.

This affection is often induced or increased by the use of a pessary. The result of these instruments is commonly to part the lips and expose the cervical membrane to vaginal friction, as well as to apply to it septic germs by the accumulation of necrosed epithelial cells on the instrument. Thus it is frequent to find a great improvement after their removal, and by the use of cleanliness.

Tents of various descriptions, taking hours to expand the canal, form a constantly increasing pressure, thus differing from the normal dilating powers, which are intermittent; and, moreover, the sponge insinuates itself into the cervical interstices, and on removal there is some hæmorrhage, showing the injury done; it also rapidly becomes septic. Intra-uterine stems cause a constant pressure, which is highly irritating. The application of caustic causes either an irritation or a destruction of tissue, the termination of which is uncertain. Any and all of the above may cause cervicitis, from which it is well for the woman when she has completely recovered.

Progressive Evolutionary Disease.—In all these causes there is present either a diminution, or stenosis and obstruction, of the cervical canal by congenital deficiency of size, or by connective tissue hyperplasia; or, and perhaps in addition, an exposure of the cervical tissue to vaginal friction; and, in the parous, there is subinvolution of the corporeal endometrium; thus the whole uterus is generally congested. Irritation of the corporeal endometrium is thus induced, which is apt to advance to inflammation and undue weight. Hence flexion, with increased weight from angularity of the canal; and thus obstruction to discharge from the tubes, and so evolutionary disease of the tubes, as hydro- and pyo-salpinx, of the peritoneum, and of the ovaries. The pain and depression of the system induce functional malaise; but the general tendency in marked cervicitis is toward congestive menorrhagia rather than to amenorrhœa. Vesical trouble is common from anteflexion, or from peritoneo-vesical adhesions; or from tubal or ovarian adhesions, which are stretched and irritated by the filling of the bladder. The progress is generally less vigorous with a small opening than where the eversion is more extensive, and consequently more exposed to vaginal friction.

The gonorrhœal causation tends to extension upwards, and virulent tubal and evolutionary disease.

Symptoms.—The symptoms are more or less considerable discharge of cohesive mucus; and in the direction of dysmenorrhœa from tension; menorrhagia from congestion; with cerebro-spinal neuralgia and debility from the drain of the leucorrhœa, and ovarian pain. There is sterility when the canal is blocked by the cohesive mucous plug.

Diagnosis.—The diagnosis is formed on the presence of the cohesive mucus and of the granular eversion; or because the canal, even when the opening is quite small, is seen to be granular—a condition which may have extended more or less on to the face of the vaginal cervix.

Prognosis.—The prognosis is that the disease will be continuous with evolutionary progress, if not surgically treated; and sterility, except in the mildest cases in which the disease is not really confirmed, is certain. But if produced by irritants, as caustics, intra-cervical appliances, or vaginal pessaries, their cessation or removal may permit recovery; but they have already, perhaps, effected permanent injury by inducing evolutionary disease of the tubes and peritonitis.

Corporeal Endometritis.

Definition.—An inflammation of the lining membrane of the body of the uterus, involving the cylindrical, ciliated epithelium, the tubular glands, and connective tissue.

Condition.—In the acute stage there is engorgement of the capillaries, with compression of the gland ducts, and the secretion is thin and scanty. In the chronic condition there is a thickening of the lining membrane, connective tissue, and glands, with a varicose state of the veins; and the discharge from the glands is large in quantity, thicker, and more or less opaque. In a gonorrhœal causation the discharge is at first thin, and subsequently purulent. In senile atrophy with chronic inflammation, the lining membrane, connective tissue, and glands have wasted, the vessels are atrophic, and the discharge is thin and acrid. During the catamenia the congestion of the vessels is increased.

Causes.—They are—

1. Virginal;
2. Parous;
3. From sexual excess or gonorrhœa; or
4. Operative.

1. In the virginal state the disease occurs—

(*a*) Where the opening is normal, with great sexual desire without marriage;

(*b*) Where the opening is of excessive size, with eversion of the cervical tissue and friction of the exposed membrane, and the corporeal inflammation is evolutionary from the cervical; or

(*c*) Where the opening is small with difficult escape of secretions.

All these causes are accentuated by evolutionary flexion, and, consequently, increased obstruction.

2. In the parous the cause is attributable to subinvolution induced by

(*a*) Laceration of the cervix;

(*b*) Septicæmia; or

(*c*) Debility, resulting from excessive or rapid child-bearing, deficient repose, superlactation, or constitutional disease, as phthisis.

3. The operative causes are—

(*a*) The forcible use of instruments in the uterus;

(*b*) The obstructing action of appliances which fill the cervical, and perhaps the corporeal, canal; and

(*c*) The introduction of septic germs within the uterine cavity by operative appliances.

Mode of Causation.—1. (*a*) In the virginal state, with a normal opening, there is no doubt that the conditions of civilisation, which prevent many women with normal desire from marrying, induce a chronic engorgement of the vessels of the uterus, and thus an undue secretion from its glands. It is probable that, in many of these cases, if marriage occur, pregnancy quickly ensues, and the congestion is thus relieved; but in its absence, the nerve excitement continuing, an inflammation results, which subsequently by evolutionary progress unfits the part for conception.

(*b*) Where the opening is unduly large, cervical tissue is everted, chronic cervicitis induced, and the resulting exposed connective hyperplastic tissue frictions against the vagina, so that congestion of the whole lining membrane ensues, and the glands are hypervascular. These relieve themselves by the formation of an excessive formation of mucus; but, also, there is an undue formation of connective-tissue cells, and the lining membrane is thickened. The gland secretion is thus abnormal, and is increased to an extent proportionate to the degree of inflammation: thinner, in the acute stage, from effusion of serum and incapacity of the cells to secrete normally; thicker, when the capillaries are more varicose.

(*c*) Where the opening is small, the congenital condition is one either of normal development of the rest of the uterus and of sexual desire, or of deficient development of uterine structure and of desire, with a more limited circulation. In proportion to these conditions is the existence and degree of an inflammatory state. In either case there is obstruction to the escape of secretions; but in the former they are larger in quantity, in the latter deficient. In the more normal formation, therefore, the inflammatory condition is more marked; while in the latter it may be but slightly exhibited or be absent. In neither of these causations is the corporeal endometrium found to be materially thickened, or the secretion so excessive as in the other conditions previously mentioned.

With the interstitial or submucous myoma, which is an evolutionary virginal disease also associated with deficient drainage and undue internal pressure, endometritis is always present.

2. (*a*) In the parous, far the most common cause of corporeal endometritis is subinvolution. Of this the most usual causation is laceration of the cervix uteri, which is occasionally induced under the use of the forceps; as in the small opening with conical vaginal cervix, in which pregnancy has by chance occurred, and which is insufficiently developed to dilate for the passage of the child without rupture; or in the large opening with everted

cervical tissue and connective tissue hyperplasia, where the thickened inflammatory product is unfitted for dilatation, and certainly lacerates. The cicatricial tissue in the angles, resulting in the healing of such original laceration, is also incapable of the required dilatation in a subsequent labour, so that there is a repeated, and probably extended, laceration in each confinement. The raw surfaces thus produced might fall together and cohere, healing by first intention; but the uterine muscular fibres retract and the lochia lie between them, so that they are not in apposition, and thus can only heal from and about the region of the angles of rupture. Meanwhile the secretions from the raw surfaces are a drain on the uterus, so that the whole strength of the vital processes is not given to the extensive process of involution, and it is impeded and does not attain to completion. Thus the involution of the lining membrane, that is, the restoration of the columnar and ciliated epithelium, and of the tubular glands and connective tissue is defective, and the muscular cells in part remain in a state of fatty degeneration, without complete absorption or discharge of effete and development of fresh young cells; and in this flabby, œdematous, but partly restored mass, the vessels lie dilated, and similarly subinvoluted, and the veins are varicose. The lining membrane is thus unduly thick, with degenerated epithelial and connective tissue cells, and the glands secrete a fluid of defective quality, but of excessive quantity, constituting a low form of endometritis, corporeal and cervical. The irritation to the injured part in the lying position by separation of the raw surfaces, and in the erect posture by movement and the influence of gravity, is sufficient to accentuate the above effects.

(*b*) If the parts become septic, by so much the more does it ensue. By septicæmia not induced by a lacerated cervix, the mode of causation is that, as to the uterus, the chorionic villi or the placenta have been adherent or not. If adherent, there has been an endometritis previous to conception, or some injury, which has caused such a separation of the placenta or membranes as threatened abortion, and in the healing they became adherent.

When in parturition the villi or the placenta are adherent, in the separation, portions remain attached, and may undergo necrosis and septic degeneration; and the intimate connection with the lymphatics and vessels permits the whole system to become infected. The patient recovering, the uterus remains subinvoluted, and the lining membrane and the glands are lax and flabby, and chronically inflamed.

The same condition follows the retention of loose septic pieces of placenta and clots: or from the influence of blood dyscrasiæ, as diphtheria, scarlatina, measles, bad drainage, and suchlike causes.

(c) Diseases or conditions of debility, as phthisis and excessive child-bearing, may leave the uterus in an enfeebled state, in which the presence of fattily degenerated cells is a prominent feature; and to this is added an œdematous state from varicose capillaries, and thus chronic endometritis.

3. As mentioned above, certain persons, perhaps married, have excessive sexual passion—an extreme example of which may be instanced in the venery of insanity, which may be insatiable, but is occasionally to be found in persons otherwise normal, it being an instance of intense sexual development; the constant exercise of the act, when the woman to some extent at least participates, may maintain the uterus in a state of active congestion, which may result in chronic endometritis.

Coitus takes place in some cases long before involution after abortion is perfected. Doubtless no miscarriage occurs unless from severe accident, mental emotion, or from medical or criminal production, except in the presence of endometritis, most frequently from laceration, or from the influence of a tumour; but after an abortion, early and repeated coitus, if the woman participate in the passion, must produce an active congestion, whereby the absorbing process is converted into a congestive state, and involution is stopped temporarily, and it may be permanently.

The same state is usually the causation of the habitual endometritis of prostitutes.

The influence of gonorrhœa is virulent. The bacillus, having attacked the cervix and the cervical glands, speedily advances to the corporeal endometrium, producing an acute and subsequently a chronic inflammation, which is liable to be permanent.

4. Operative action is a causation in many ways. One of

the commonest modes is by the forcible use of the sound, the line of the canal perhaps not being followed, but undue pressure exerted on the stroma; or increase of the endometritis in the case of a virginal inflammation with perhaps adherent tubes and misplacement of the uterus, by forcible replacement, and particularly, if the sound be septic; by the introduction of tents, especially sponge-tents, which quickly become septic; by the use of intra-uterine stems, which necessarily retain secretions about them, readily becoming septic within the uterine cavity; by the action of irritants, especially with stenosis of the inner or outer os, from a previous condition or the thickening of inflammatory action, so that temperature may rapidly rise, and a chronic endometritis persist. And similarly, by any other operative measure about the uterus, whereby septic germs infect the membrane; and especially if drainage be deficient.

In the case of abortion being criminally induced, the after repose is usually insufficient, and the erect position creates gravitation of blood in the dilated veins, and subinvolution and endometritis result.

Progressive Evolutionary Disease.—Virginal inflammation of the corporeal endometrium being established, whether by obstruction by a small outer or inner opening or both, and perhaps a congenital angle of flexion; or with a large os with cervical eversion and great vaginal friction, accentuated by connective tissue hyperplasia, the secretions have the greater difficulty in escaping, and some distension of the corporeal cavity ensues. If the junction be already feeble, the body falls forwards, and anteflexion occurs with pressure on the bladder. But also, if the uterine structure be strong, the induced weight of the body may cause it to fall forwards, when anteversion results; later, by retention of constipated fæces in the rectum, the cervix may be depressed, and finally pushed forwards, creating an angle of flexion, and anteflexion with pressure on the bladder.

But more frequently in the strongly developed, the junction resists this influence, and the weight of the tubes has a greater power; by the original causation and induced endometritis, the escape of the secretions from the Fallopian tubes into the uterus is hindered, and the tubes become dilated, congested, and heavy. They therefore tend to descend in the cavity of the pelvis, and to become angled near the uterine junction, whereby the lumen of the tube is the more impaired, and the secretions accumulate. Thus they pull upon the fundus, particularly in the recumbent position assumed by stress of the pain and malaise of the condition, and virginal perpendicularity, retroversion, and, rarely, retroflexion ensue. If the secretions accumulate, the tubes become the more distended, until the limit of their capacity is attained, when they must discharge either at the uterine or fimbrial extremity. The obstruction being greater at the uterine end, and there being none at the distal, except the natural reverse direction of flow, some tubal fluid presently oozes therefrom, and creates an irritation which induces peritoneal congestion or inflammation, resulting in more or less adhesions about the fimbriæ, ovaries, and uterine fundus, which thus tend to bind the uterus in the retroflexed position, with distal closure of the tube and thickening of the ovarian coat. Hence ensue difficulty of Graafian follicular rupture, and formation of follicular cysts, and their evolutionary diseases and results.

In the parous, the subinvolution permits a jelly-like thickening of the lining membrane to persist, which may be removed in flakes, rarely or never found in the virginal forms; and in the causation of laceration, the irritation of the granular face persisting, the tendency is in the direction of chronic inflammatory action about the everted split lips and endometrium, of chronic indolence of circulation, and of nutrition of the muscular structures, especially of the body. There being also deficiency of recovery of the suspending uterine ligaments, of the supporting pelvic fascia, and of the vaginal and perinæal structures, the conditions of undue weight of the uterus and of deficient sustaining power permit uterine descent, and it takes a plane lower than the normal, and the axis of the plane to which it has descended. Hence perpendicularity and retroversion; and by fæcal pressure on the summit, and fæcal accumulation posterior to the cervix, retroflexion, to which it is susceptible by the flabbiness of its structure from subinvolution. Or anteflexion may occur, particularly when the ante-parous condition tended to that position.

The condition of endometritis and evolutionary progress are accentuated by the flexion impeding the escape of blood through the angling of the veins, which are more susceptible to its influence than the arteries with the pump of the heart behind them, and a varicose congestion ensues, and by the obstruction to the escape of the secretions by the angling of the canal, whereby pressure on the endometrium is caused; but as the muscular fibres are fatty and lax, the irritation is incapable of producing their active normal contraction, and expulsion of the glandular secretions, which tend to be retained with increased obstruction to the secretions from the gland-ducts, and therefore greater irritation in their formation, both as to quantity and quality.

These evolutionary causes and conditions of retroflexion persisting, the tendency is to farther descent; and thence, but more rarely, and usually in connection with the presence of laceration of the perinæum, or of subcutaneous laceration of the perinæal muscles, prolapse of the uterus, at first with or without vesicocele or rectocele, but subsequently inducing these conditions.

The thickened state of the endometrium readily hinders the perfect drainage of the Fallopian tubes, which are thus heavy, and tend to be displaced downwards and backwards, and to angle near the uterine junction. The descent of the uterus and its subsequent retroflexion accentuates this angling, and the obstruction to escape is increased. Thence tubal disease with fimbrial effusion, peritonitis, ovarian thickening, and evolutionary disease.

The progressive evolution of gonorrhœal endometritis is of a more virulent form. The specific micro-germ, ascending from the cervix to the corporeal endometrium, causes an acute inflammation, with thin, acrid, and later purulent secretion, thickens the membrane, and affects the glands in a manner tending to be permanent. Progressing into the tubes, the inflammatory conditions advance, and fimbrial effusion, peritonitis, tubal closure, ovarian thickening, and follicular disease result, proportionate to the degree of tubal and uterine obstruction induced. While this obstruction may be at times diminished by escape of uterine discharge, the disease may not be cured; but by continuance of action, recurrence of accumulation, and passage over the inferior surfaces, the inflammatory action of the vagina is reinduced; this under treatment may be remittent, though its evolutionary effects on the higher structures are progressive, leading particularly to pyo-salpinx, pyo-ovaritis, and virulent peritonitis, the pus perhaps discharging into a peritonitically attached viscus.

The results of excessive coitus are of the same nature, and in a less degree, but without the specific gonococcus. The constant and considerable congestion so puffs the endometrium, and renders it œdematous, that the tubes sympathising, and being thus stenosed in the uterine portion, secretions effuse from the distal end, induce peritonitis of a low character, and the fimbriæ are closed. Whence result the evolutionary affections of the ovaries, aggravated by the frequent sexual excitement.

Operative endometritis, which is always septic, either being so previously, or rendered so in the operation or subsequently, is apt to be rapid in its evolutionary effects; thus enlarged, misplaced tubes and peritonitis may shortly be evident. This speedy evolution is attributable to the congestive œdema induced, which, preventing drainage, effects fimbrial effusion; and the sexual state of the woman is, so far at least as the side affected is concerned, permanently ruined. The after conditions are usually of a more chronic procedure, should the irritating treatment be stopped. This evolution is, unhappily, exceedingly common.

Symptoms.—The symptoms are attributable to irritation of the extremities of nerves affected, and of the centres, whether at the sites of causation, as of the cervix, or of the endometrium; and particularly when the evolutionary progress has affected the position of the uterus, the tubes, or ovaries. From the drain of the leucorrhœa on the system, a general malaise ensues, and a sense of weakness and languor, and reflex neuralgias of the back, nape, and head. The evolutionary misplacement of the uterus presses on the bladder or rectum, producing vesical irritation or rectal debility; hence constipation, fæcal absorption, bad appetite and indigestion, and spanæmia. By ovarian irritation, pain in the lower abdomen, and especially over one or both ovaries, in the lower back, nucha, and head—that is, cerebro-spinal neuralgia, including particularly eye-dimness and debility. By the tubal and ovarian progress; peritoneal inflammation, especially within the pelvis. The menstruation is generally affected according to the sexual strength; thus, in the virginal states of congenital deficiency, the condition tends to irregularity of the catamenia and amenorrhœa; in those of more perfect sexual development and of active passions to menorrhagia; the latter, in the parous, accentuated by the varicose state of the veins.

Diagnosis.—The diagnosis is formed on the increased quantity and more irritable quality of the discharge, which in the corporeal disease is not cohesive, as in the cervical, but may be thin and acrid in the more acute forms, opaque or purulent in the more chronic. The uterus, when the inflammation is more active, is tender on pressure; and particularly the ovaries, when they are evolutionarily affected. The granular state may be seen on the face, at the edges of the lips, or within the canal, whatever be the causation. In the parous the uterus is enlarged.

Prognosis.—The prognosis, except in the mild condition of the normal os, is certainly that the disease will be continuous, and evolutionarily progressive, unless drainage is produced and maintained, hyperplastic tissues removed, and granular irritations healed. If there be causationary hyperplasia, or evolutionary misplacement, they will become accentuated or recurrent. In gonorrhœal causation, the evolution is generally progressive.

CHAPTER V.

GONORRHŒA.

Definition.—A sexual disease of the parturient canal and urethra, induced by the introduction from without by contagion of the gonococcus microbe, which, probably first gaining attachment in the cervical canal or urethra, extends to the vagina; and, perhaps in connection with the staphylococcus and streptococcus, produces an acute inflammation, and a suppurative discharge.

Condition.—The vagina, in the acute stage, is very tender, swollen, and inflamed; the rugæ are prominent, and a thin pus exudes from the surface of the canal. The vaginal cervix is inflamed, and the urethra similarly to the vagina. Later, the rugæ are less prominent, but a low inflammation exists, and the pus is more creamy, and may collect in the upper vagina, being retained there by the muscular contraction and the puffed membrane below. Finally, the tenderness ceases, the vagina is of a dull darkish red colour, and the discharge is a thin watery pus. The disease is most commonly found in the woman from contagious coitus, but may exist in the child and old woman.

Cause.—Gonorrhœa is always induced by the introduction of the microbe from one who has the disease, not necessarily by actual contact, though this is most usual, but occasionally by juxtaposition with those who have it, or by contact with that on which they have deposited their discharge.

Mode of Causation.—In consequence of the resisting power of the vaginal membrane, the gonococcus first gains attachment in the cervical canal or the urethra; there multiplying, by the strength of continuous contagion it attacks the vagina, and, in combination with suppurative action induced by pyogenic germs, enters pus and epithelial cells, and rapidly propagates.

As in the case of gonorrhœal ophthalmia, so in gonorrhœal vaginitis, the disease may be induced by the use of infected linen, by the fingers, instruments, and otherwise. Finally, auto-infection is frequent; the original vaginitis having been cured, the discharge from above makes its way downwards and reinfects the vagina; and this may occur again and again if the gonorrhœa of the uterus and tubes persists.

Progressive Evolutionary Disease.—In the earliest stage the disease is of the urethra, or of the opening of the cervix. By contact in either case the vagina is affected, and it is in the vagina that the disease is first noticed. The microbe multiplies and enters the epithelial and suppurative cells. The cervical opening is exposed to the influence, and through it a rapid progress affects the corporeal endometrium, and inflammation both of its surface and glands occurs, with thickening by œdematous infiltration of the cervical canal. Ready escape of discharge is thus hindered, and the uterine accumulation renders implication of the tubes easy and almost certain. The irritation extending to the fimbriæ, an immediate secretion irritates the peritoneum, producing a local peritonitis with exudation of fibrin, which binds up and occludes the distal end of the canal.

The puffing of the inflamed uterine extremity causes a narrowing, so that the discharge accumulates in the body of the tube. Under the pressure of the tension induced, one end or other of the canal yields. If this be the proximal extremity, which is most frequent, the discharge escapes through the uterus and vagina, and the tubal distensive attack is ephemeral, but usually recurrent; but if the fimbrial adhesions have been slight, or the puffing of the uterine extremity vigorous or valvular, particularly if also angled, the gonorrhœal secretion and pus may break through the fimbrial adhesions and pass directly into the peritoneum, and on operation be seen to drip from the fimbria. A virulent peritonitis at once results.

Should dense, strong closure of both tubes persist in spite of central tension, the pus accumulates, and a pyo-salpinx is induced, of which the matter makes its way laterally in the direction of least resistance, and generally into adjacent intestine by minute rupture; such collection and discharge are generally recurrent. Fæcal infection of the sac is apt to ensue, and septicæmia, wasting, and death result. But occasionally contraction of the tubal cavity takes place, perhaps with fatty degeneration of the remaining pus cells, and local atrophy; and recovery ensues, but with a closed tube.

Should gonorrhœal pyogenic matter be present in a tube of which the fimbriæ are attached to a rupturing Graafian follicle, it probably infects it, and an abscess of the ovary results; or it may be that it effuses on to the surface of a closed follicle, to which the fimbriæ are attached by peritonitic adhesions, and an abscess may form there, as a tubo-ovarian abscess, in the development of which the fimbriæ and ovary are so implicated, and such destruction of ovarian tissue by pressure results, that the abscess may appear, in the matted state of the parts, to be an abscess of the ovary itself.

On recovery by attenuation from gonorrhœa of the tubes, uterus, and vagina, with closure at the fimbriæ, the ovaries remain thickened by peritonitis, or adherent; and this by local bands, or completely. Evolutionary follicular cysts therefore result.

The disease may not be confined only to the line of the urethra and bladder, but may spread into the ureters and kidneys, and induce suppurative action. In healing, the ureter may be stenosed, and thus obstructed, and evolutionary disease of dilatation and suppuration of the kidneys ensue. Vulval abscess of Bartolini's glands may ensue.

Symptoms.—The first symptoms are an itching and irritation at the entrance of the vagina, which rapidly increases and extends, so that the labia and vagina are swollen, inflamed, and very tender. At first there is a thin, acrid, watery discharge; presently yellow, purulent, and copious; and, later, white and thin. Micturition is frequent and painful.

Diagnosis.—With these symptoms the presence of vaginitis is certain. Reliable history of the absence of excessive venery and of pessaries, and most especially the presence of the urethritis and bladder irritation, distinctly indicate gonorrhœa. The contagion conveyed to another accentuates the certainty. Recurrent vaginitis from discharge from the uterus is evidence of previous existence of the vaginitis, as well as of its continued presence in the uterus, and, in all expectation, in the tubes.

Prognosis.—The occurrence of gonorrhœa, when confined to the vagina, urethra, and bladder, is comparatively unimportant; and thus its original attack on the urethra, rather than on the opening of the cervix, is quite differential as to necessity of progress to the uterus and upwards. When thus limited, and there be sexual repose, the disease may presently terminate by attenuation, and far more readily if cleanliness with a syringe, and some kind of injection of a drug, inimical to the vitality of the microbe, be used. Many cases thus recover completely. But if the infection should have spread up the utero-tubal canal, it is doubtful if the disease or its evolutions are ever banished, either because of its own sluggish continuance, in consequence of the general inflammatory thickenings induced, and hence accumulations of gonorrhœal secretion, or on account of the permanent stenoses, strictures, and adhesions which produce persistent obstructions to escape of the normal secretions, and of the ova.

In the event of early acute peritonitis from effusion of gonorrhœal matter into the peritoneum, serious results may be anticipated.

Stricture of the ureter produces such dilatation of the kidney, which is generally suppurative, that a fatal result is finally to be expected, unless operative interference relieve the condition.

CHAPTER VI.

THE GRANULAR OS.

Definition.—The presenting part of the vaginal cervix in the virginal state is more or less denuded of its epithelium as far as the basement layer, the villi being thus exposed; and, if there have been laceration of the cervix, the muscular tissues, over which the pavement epithelium has not yet grown, are raw and granular.

Condition.—The condition is

1. Virginal, or
2. Parous.

1. In the virginal state, when the opening is normal in size, the inflamed, thickened, and granular tissue is everted through the lips, or the opening remains patulous, but the tissue in the canal is seen to be granular and inflamed; the edges of one or both lips are granular, and the face is congested.

Where the opening is congenitally deficient in size, it appears as a small slit, or minute dimple, in the middle of a convex cervix. The granulations may be only at one or both edges of the opening, or may extend over the whole extent of the convex face of the cervix, and resemble a rubbed raspberry. The cervix is highly congested; the granular surface bleeds on slight friction; there is connective tissue hyperplasia, so that the lips are pressed together. The tissue feels velvety or firm, according to the preponderance of exuberance of the villi, and the dilatation of the capillaries within them, or of dense hyperplastic connective tissue.

When the opening is of excessive size, the inflamed cervical tissue is exposed, and may be everted, hernial and œdematous, so that the internal surface of one or other lip may form a granular prominence on the cervical face. Such eversion may be so extensive as to largely dilate the opening, so that it would appear that there must have been parous laceration, which is contra-indicated by a close virginal hymen. Beyond the granular everted cervical tissue the pavement epithelium of the vaginal cervix may have been removed and the surface be granular, being villous and hyperplastic. Cysts of mucous follicles, closed by hyperplastic contraction, may be seen on the everted cervical membrane.

2. In the parous, the rather large patulous opening permits the descent of the œdematous, puffy, cervical, granular membrane, and some granulations may be present at the edges. The face is pale and lax.

Or the cervix has been lacerated to a less or greater extent. When in a less degree, the conditions are, so far as eversion of cervical tissue goes, the same as in the eversion of the opening of excessive size, but with the addition that the angles of the opening being formed of the split deeper structures which have deficiently united, the muscular cells are exposed, and later are coated with a granular layer. Mucous cysts may be present on the everted cervical membrane.

When the cervix has been lacerated in the greater degree, the everted granular tissue is composed mainly of the granulations covering the unhealed, deep, cervical, muscular structures, and this may extend deeply into the vaginal junction, according as the laceration is unilateral or bilateral, anterior, posterior or stellate, and to the degree to which pavement epithelium may have grown over the raw lacerated surfaces. The appearance presented in the extensive chronic bilateral form is that of two granular buttocks with a fissure, the enlarged opening, between them.

The condition is, therefore, one of ulceration combined with increase of material; ulceration, in that the superficial cells are removed to the basement membrane of the villi; increase of material, since the connective tissue is augmented.

Causes.—The granular os is consequent on cervicitis, on which it is dependent, and from which it arises, and its original cause is therefore as in that disease, to the chapter on which reference may be made (Chap. IV.). Strong evidence of this is to be found in the fact that a granular spot is never seen other than continuous with the cervicitic tissue.

The causes are:—

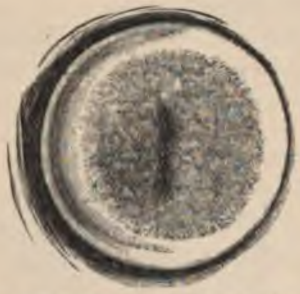
1. Virginal cervicitis in

(*a*) The normal os, with strong sexual feeling and absence of marriage;

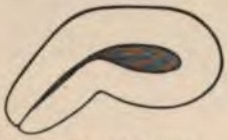
(*b*) The small opening, with otherwise good sexual development; and

(*c*) The excessive size of opening with eversion.

FIG. 21.



Virginal os with large opening and great cervical eversion of pale pink granulations and dense hyperplasia. The uterus is anteverted. The hymen is very tight. There is severe menorrhagia. Aged 18.



Section of uterus.

2. Parous.

(*a*) Subinvolution of the cervical muscular tissue and eversion;

(*b*) Laceration of the cervix.

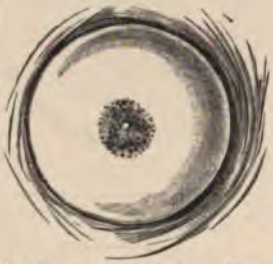
In all of these causations the influence of abdominal pressure and vaginal friction strongly accentuate the affection.

Mode of Causation.—In 1, the virginal causation—

(*a*) The opening being normal in size, the passions strong, marriage not having taken place or only late in life, or pregnancy being prevented, endometritis occurs by the chronic congestion of unsatisfied passion with exacerbations; the cervical membrane is chronically congested, and to a less or greater degree everted and exposed, and removal of its surface cells takes place. The villi of the vaginal cervix participate in this chronic congestion, and the pavement cells adjacent to the columnar cells of the canal may similarly be softened and removed by a process of destruction, and therefore of ulceration; but the extent of surface of the vaginal cervix to which this action extends is usually limited to the edges of the lips; for the obstruction in the canal, and therefore to circulation, is slight, and consequent extended varicosity of the villous capillaries is defined; but a deeper hyperplasia of the connective tissue under the granular surfaces ensues.

(*b*) In the case of endometritis with a small opening, and perhaps small and conical cervix, but with the uterus and sexual power otherwise well developed, usually with anteversion or anteflexion in which the body is depressed, and the cervix looks downwards, the vaginal cervix is not infrequently granular to the extent of from half to three-quarters of an inch in diameter, and presents the appearance of a rubbed raspberry, in the centre of which the minute opening is tightly compressed. The mode of causation here is of an intensely congestive

FIG. 22.



Virginal well-developed uterus, but with very small opening, almost closed by areolar hyperplasia, and granular edges, and a small cervical cohesive plug. The face is very congested.

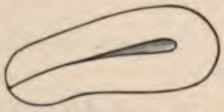
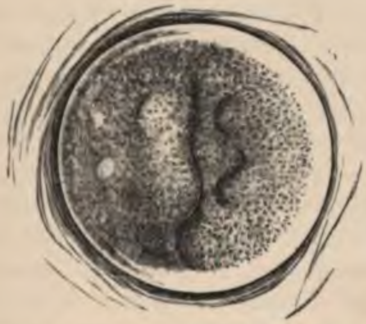


Diagram of anteverted uterus, well developed.

character, the obstruction to escape of cervical secretion through the small constricted opening being great, the cervical glands distended, and the villous capillaries engorged—a condition accentuated by obstruction to venous return by the angling of the flexion. Thus the circulation and nutrition of the squamous epithelium of the vaginal cervix is affected, and destruction of surface cells ensues by the inflammatory action, and particularly by friction of the depressed displaced face against the rough virginal vaginal rugæ, and the prominent villi, bared to their basement layer, are exposed. The deeper connective tissue becomes indurated, and connective tissue hyperplasia is presently marked.

(*c*) In the case of the congenital large opening, with eversion of cervical tissue, there is not seldom at birth a granular state around it. But at and after puberty it is not rare to find this condition very marked, and occasionally to such an extent as to

FIG. 23.



Virginal, very everted, hyperplastic, raw-beef face, with cysts. The hymen is tight.

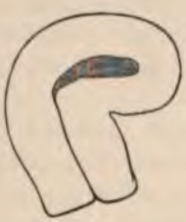


Diagram of virginal eversion with anteflexion.

appear to be a rather severe laceration of the cervix. The thickening, descent, and eversion of the cervix have so dilated the opening that it gapes less or more, and perhaps widely, the villi are desquamated as well as the epithelium of the vaginal cervix, and this occasionally extends two-thirds towards the vaginal junction. This condition much resembles the granular state connected with lacerated cervix, but there is no granular groove at the angles as in laceration, but a more general spread of granular face, with flattening from pressure. Congestion and hyperplasia are very marked, and have been mainly caused and increased by friction against the posterior vaginal rugæ.

2. In the parous, granular os proceeding from—

(*a*) Subinvolution of the muscular tissue of the cervix, so that the opening remains unduly patent, the puffy, congested, cervical lining membrane bears down, is everted, and the villi are exposed, subsequent to which the adjacent vaginal cervix may desquamate, chiefly by the influence of vaginal friction.

(*b*) The granular os from lacerated cervix is exceedingly common. The cervix having been more or less split, the surfaces in an early stage are like raw beef; later, when inflamed and softly villous, velvety; and subsequently firm or hard and granular by connective tissue hyperplasia; and the adjacent cervico-vaginal edges occasionally lose their surface epithelium, and develop granular cells. The greater the subsequent connective tissue hyperplasia, the greater the eversion and extent of flattened surface of granulations.

In all these causes the granular state is apt to be materially determined and extended by the act of friction of the cervical face against the vaginal rugæ, particularly under the influence of undue abdominal pressure, as tight stays; and occasionally may be seen a most severe example in rough-riding women, virginal or parous.

Progressive Evolutionary Disease.—The granular condition continuing, the vessels of the villi are congested and engorged, and transudation of fibrin from them occurs, the serum is absorbed, and the fibrin develops into a low form of connective tissue, which compresses or occludes the gland-ducts. Thus the raw face is rendered more prominent, and may finally present a general aspect of convexity. The influence of vaginal friction on the granular surface on movement maintains the congestion, whereby the uterus continues congested, while the continuity of the granular surface, with the superior cervical tissue, exaggerates the inflammation of the latter and of the corporeal endometrium, and accentuates the original tendency of the causation to evolutionary disease of the tubes, peritoneum, and ovaries.

The chronic inflammatory granular face, under the influence of almost constant friction on movement of the body, presents conditions peculiarly adapted to the creation of rapid cell formation of deficient perfection. Should this excess and degeneration of cell formation persist, they are liable to deteriorate into the amœboid type, with intense multiplication, variety of form, and invasion of adjacent structures, which is designated malignant.

Symptoms.—The symptoms are those of the causation, with the addition of vaginal friction on the exposed cervical, or cervico-vaginal villi, and there is persistent leucorrhœa.

The cerebro-spinal irritation is therefore increased, and neuralgias of that axis in various localities occur. The drain of discharge weakens the body, and debility or anæmia results. The digestion is thus affected, leading to dyspepsia, constipation, and flatulence. The evolutionary affections of the ovaries produce pain in one or both iliac regions. The mind may become affected, particularly in the sexual direction, not infrequently in combination with the religious.

Prognosis.—In the mild cases of virginal origin, where the opening is patulous, and not blocked by cervical mucus, in which marriage and pregnancy take place, the causation is thereby removed; otherwise in the untreated, the causation continuing, the affection is certainly progressive. In labour the granular tissue with connective tissue hyperplasia is incapable of the needful dilatation, and laceration takes place, with increased inflammatory granular surface.

In the laceration of the parous, in a mild case, the raw surfaces may heal; but, for reasons given in the chapter on lacerated cervix, they rarely do so completely, and the middle or cervical tissue of the face remains granular—probably to be further lacerated in the next confinement.

The drain of discharge on the system maintains a debilitated condition.

No woman with granular os is free to the last days of her life from the risk of super-development of malignancy on the granulations; this frequently takes place many years after the menopause, and may occur at an early period.

CHAPTER VII.

LACERATION OF THE CERVIX UTERI.

Definition.—The cervix, having failed sufficiently and normally to dilate, has split to a greater or less extent.

Conditions.—The laceration may extend to various degrees and situations, and the conditions may be thus summarised:

1. Laceration through the mucous and muscular layers of the lower part of the cervix;

2. Through the lateral wall of the vaginal cervix, not extending so far as the vaginal junction;

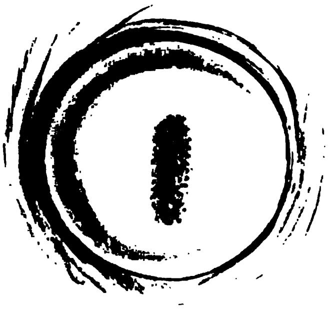
3. Through the vaginal cervix into or beyond the vaginal junction on one or both sides, extending into the cellular tissue of the broad ligaments, or anteriorly into the utero-vesical attachment, or also through the bladder wall creàting a vesico-cervical fistula; or posteriorly into the posterior cellular layer, or Douglas' pouch.

In all these conditions, if the os were originally granular, this state persists, accentuated by the influence of the laceration; and the former has therefore to be taken into account in the description of the condition.

1. Laceration through the mucous and muscular layers of the lower part of the cervix, not extending through the lateral cervico-vaginal wall, is the mildest form. The opening is not necessarily of increased size, but the connective and epithelial layers being entire hold the raw surfaces in apposition, and there is no habitual vaginal exposure of granular surface, and but slight eversion of mucous membrane, which is granular at the edges, and seen to be granular in the cervical canal,

which is enlarged and inflamed; the angles of the lacerated face usually heal, and perhaps the edges.

FIG. 24.



Parous laceration of the mucous and muscular tissue of the cervix, not extending through the vaginal wall of the vaginal cervix, except slightly at the opening. The finger to the first joint enters the cervix. The edges of the lips are granular and hyperplastic.

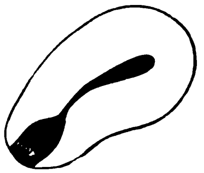
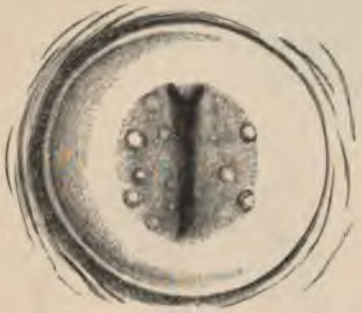


Diagram of uterus, showing the laceration.

2. In laceration through the whole breadth of the lateral wall of the vaginal cervix, not extending so far as the vaginal junction, the raw faces are at first in apposition. Presently, however, when bilateral, they become granular and hyperplastic, and the granular, everted, hyperplastic surface of one lip may be considerably in excess of that of the other, which may have only a broadened granular edge; or both lips may be strongly hyperplastic, particularly near the hinge, so that the appearance is presented of two rounded prominences, on which may be cysts formed of obstructed gland-ducts, with a groove between, in the centre of which is the opening of the canal. The compression of the hyperplasia at the level to which the laceration has extended brings the sides of the canal at this point closely together, so that the opening does not gape. If

FIG. 25.



Laceration through the cervico-vaginal wall extending nearly to the vaginal junction. The everted lips have become covered with epithelium up to a central granulation of hyperplastic, cystic, cervical tissue.

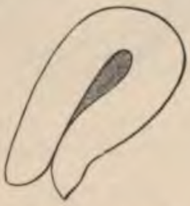
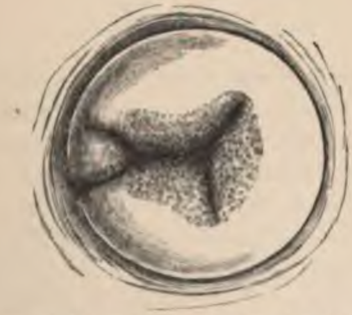


Diagram of uterus, showing the laceration and eversion of the lips, with some hyperplasia of the posterior.

FIG. 26.



Stellate laceration of the cervix posteriorly into the vaginal junction everted granular hyperplastic tissue.

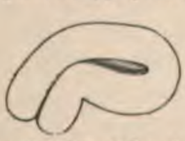
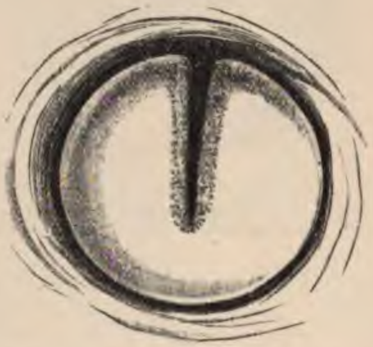


Diagram of heavy, subinvoluted, anteflexed uterus with laceration.

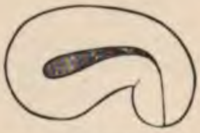
the tear be stellate, additional grooves are seen, hyperplastic tissue rising between them.

In unilateral laceration of the same class, the eversion and hyperplasia are less marked.

FIG. 27.



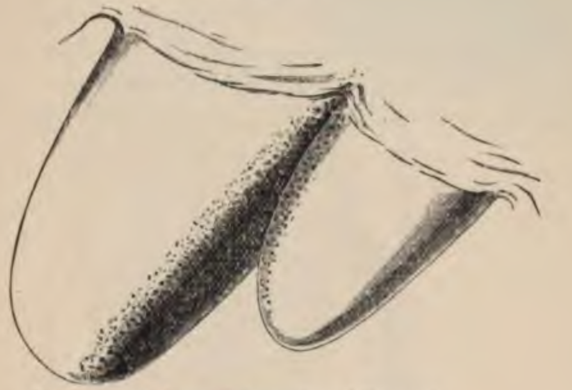
Right unilateral laceration deep into the cervico-vaginal junction. The faces and edges are granular.



Heavy retroflexion in same.

But should the split on either side incline anteriorly, the opening is crescentic with the concavity looking forwards, and not necessarily particularly large; but the anterior lip has the appearance of being comparatively small and retracted, while the posterior, of which the thin edges at the angles of the laceration on either side contract, is unduly large; and its mucous membrane and raw lacerated surface are greatly exposed. This exposed mucous membrane of the posterior lip, by friction against the vaginal wall, becomes granular, and the connective tissue hyperplastic; but the edges of the small anterior lip generally become covered with epithelium. The cervix thus has the aspect of a shark's head, of which the upper projecting extremity of the posterior lip forms the nose, the gaping opening presenting posteriorly and downwards represents the mouth, and the small anterior lip forms the retracted lower jaw; it may be called the shark's-mouth laceration.

FIG. 28.



Very large shark-mouth laceration of the cervix.

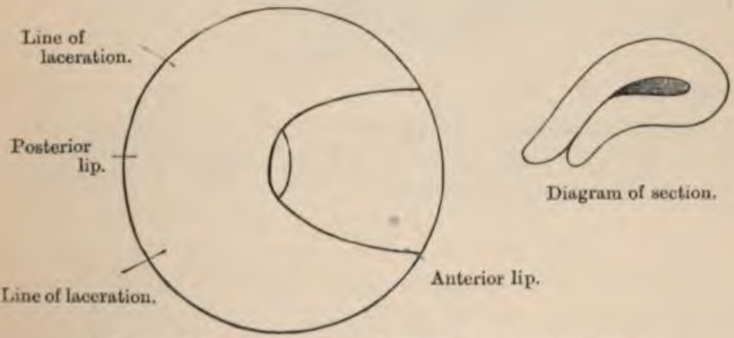


Diagram of section.

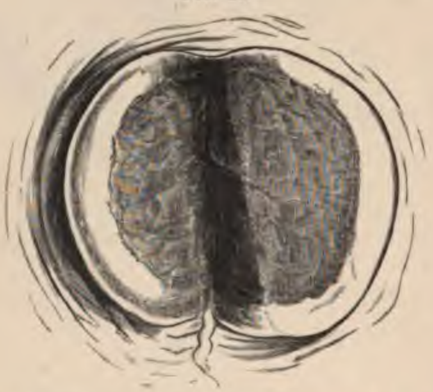
Diagram of transverse section, showing the mode of laceration.

3. In laceration through the vaginal cervix, extending into the cellular tissue, it may be unilateral, and generally on the left side. In this case a continuous fissure is felt to extend from the angle of the normal end of the os, across the face, through the wall of the vaginal cervix, and into the vaginal junction; and a cicatrix may often be felt and seen where the tear has healed for some distance down the vagina. The edges are granular, and there may be some eversion and hyperplasia. In the angle in the junction the connective tissue is felt to be

indurated, and is tender; and the uterus is generally cicatricially attached and drawn towards that side.

In bilateral laceration, the faces of the exposed surface have no muscular support, and in the earlier time are raw, may lie in apposition, but are readily parted. Later they are granular and hyperplastic, and the general aspect is flat or convex, or convex with a lateral groove, in which is the opening of the canal as in more limited bilateral laceration of the vaginal cervix described above. One or both angles are deep in the connective tissue, and may be hidden by contraction of the circle of the vaginal roof, and sinus granulations may be present in one or other angle in which the laceration is particularly deep; the connective tissue is felt to be indurated, and is tender; and the uterus is usually adherent to the dense cicatricial connective tissue of the broad ligament, and drawn to the side on which the greater irritation has occurred.

FIG. 29.



Parous lacerated cervix, on the right to the vaginal junction, on left deeply into deep tissue; cicatrix down the vagina seen for 2 inches. The raw-beef faces are very large, healed at edges. Forceps shortly after commencement of labour.

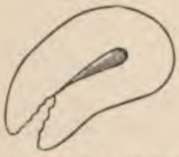
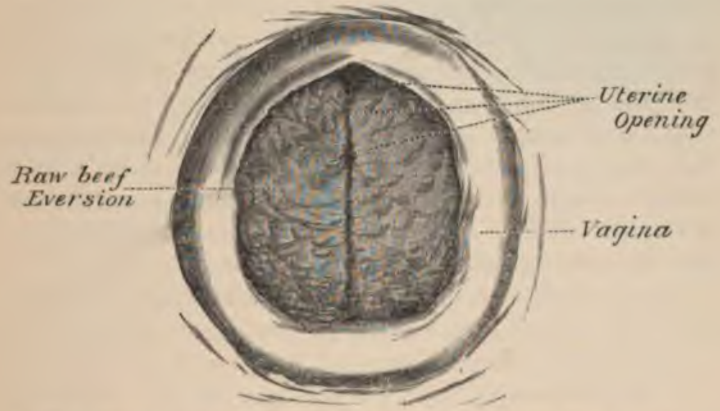


Diagram of uterus.

When the laceration is anterior and extends into utero-vesical connective tissue, the conditions are much as in the unilateral; and if through the bladder-wall, the urine may escape immediately; but much more frequently after a few days, when removal of the slough determines the fistula; if posteriorly, the rent may open Douglas' pouch, and subsequently heal to the vaginal junction.

FIG. 30.



Very deep laceration of the cervix uteri beyond the vaginal junction, particularly on the right (upper) side. The tissue is deeply everted, and is like raw beef. The sound enters at the right (upper) third, and the opening extends beyond the right vaginal junction. The vaginal junction has contracted, forming a rim.

Causes.—The causes are—

1. Congenital deficiency of development of the cervix;

2. Connective tissue hyperplasia of the cervix, generally with granular os;

3. Certain diseased states of the cervix, as cancer; and

4. Operative.

Mode of Causation.—1. In congenital deficiency of development of the cervix, the cervix is small and conical; the opening is small and frequently pinhole, and the feebleness of structure has induced virginal anteflexion, so that both body and cervix have looked more or less forward. When pregnancy occurs in such a condition, the development of the cervix in pregnancy is imperfect; the os is so small that the wedge of the membranes does not readily engage in it, but distends the superior tissues laterally, so that the condition of rigid cervix is produced. Should the pains be so violent that presently it yields, a laceration occurs which may be deep and extend into the vaginal junction.

When such a cervix dilates normally, at the time when the greatest distension is upon its circle it is liable to give way; for the muscular tissue is deficient in quantity, and therefore in power of resistance. Such a laceration is generally less deep than the former, for the higher cervix is stronger and more muscular; and, the lower part being originally small, there is less extent of raw surface, and therefore greater opportunity of retraction and of healing.

2. Connective tissue hyperplasia of the cervix may have been originally

(*a*) Virginal, or
(*b*) Parous.

In (*a*) virginal hyperplasia, the state may have been congenital, and increased by vaginal friction, or unsatisfied sexual passion and absence of pregnancy. On late marriage, should pregnancy occur, the softening muscular development does not cure the granular face, formed of the villi of the mucous membrane, which appears rather to be more everted and congested; nor remove the connective tissue hyperplasia, of which the aggregation of cells is not adapted for distension. In labour, neither of these tissues lends itself to extreme dilatation, but lacerates; and when the tear commences, it may run on into the deeper structures. In this condition laceration is to be anticipated.

(*b*) In the connective tissue hyperplasia of the parous, there has been laceration in a previous labour; but epithelium may have grown over more or less of the raw faces, so that, though usual, it is not necessary that they should be granular. The previous rent has left indurated angles, which are the weakest part of the circuit on extreme distension, and are therefore the points at which laceration is likely to be extended. Thus such tears are successive; and while the earlier laceration may not have produced marked morbid symptoms, a later labour may appear to have been the origin of illness, which it was not. Thus a laceration of the first degree is liable, in subsequent labours, to advance to the second or third; and in some cases in which there has been an ultra-vaginal laceration up to the uterine artery, a succeeding labour may extend it to such a degree as to produce fatal results from hæmorrhage, or peritonitis.

3. In cancer of the cervix there is a large production of new cells, which, not being muscular, are capable of separation, but not of expansion. Even when the size of the head has been reduced, a ragged laceration is likely to be produced, which extends up to the superior level of the disease, and death frequently follows.

4. Of operative causes:

(*a*) Excessive metrotomy, when the lateral wall of the vaginal cervix is divided, produces the same results as a puerperal laceration, except that the process of involution is not in action. The incision having, by scissors or some similar operation, divided the mucous, muscular, and external wall of the vaginal cervix, the raw faces fall apart. The capacity of repairing the damage done is greater than in the puerperal state, for the lochia do not intervene, and the cervico-vaginal pavement cells may spread over the surface. If the division, however, of the cervix be deep enough, the faces evert, rub against the vagina, and become granular and hyperplastic; and the appearance simulates that of laceration to a like degree.

(*b*) Incisions into the cervix for rigid os in labour may be expected to be continued into the deeper structures during the passage of the child, for the same reasons that account for their laceration.

(*c*) Under the use of the forceps lacerations occur, as they also frequently do without them. It is evident that when Nature, placed under the most favourable circumstances by art, has shown herself wearied and incapable of effecting delivery, the child cannot remain longer unborn, and labour must be terminated. Should the cervix be of deficient development, or the structure degenerated by connective tissue hyperplasia, at the moment of greatest distension, the tissues may split with as without forceps. Also, in case of long delay, and pressure of the head on the anterior lip against the pubes, the tissues become congested, and œdematous; and necrosis, as well as laceration, is likely to take place. But, unhappily, there is a growing tendency among a few practitioners to hasten delivery; the forceps are applied by them when the dilatation of the cervix is far from sufficient, and apparently, sometimes, when labour has scarcely commenced; the child is dragged through the passages, and laceration of the cervix, deep into the vaginal junction, is effected.

Progressive Evolutionary Disease.—The immediate influence of laceration is to rupture blood-vessels and lymphatics, so that the former may bleed, even rapidly, to death; or more slowly, though persistently, unless the vessel be compressed; and the latter absorb septic matter, and septicæmia be induced. Should the split be into the connective tissue, and not immediately heal by primary union, an inflammatory thickening at this site occurs, which, in cicatrisation, draws the uterus over to that side; but tenderness usually remains there, and, though the split in the connective tissue heal, the cervical rupture persists up to its cicatrix, and a sinus-granulation remains in the angle. In a subsequent labour the laceration generally extends.

But this cellulitis may be less limited, and under septic action extend more deeply into the broad ligament; it, however, rarely produces a continued suppuration; since whatever pus or slough forms finds ready exit through the line of injury into the vagina.

By absorption of septic matter by the raw cervical surfaces some inflammatory action results, which, similarly infecting the uterine canal and the tubes, may induce peritonitis, the result of which may afterwards be found in adherent tubes, ovaries, or uterus. Puerperal phlebitis, originating in a torn vein, may ensue: should this be suppurative, the danger from suppurative thrombosis is acute; but if the vein become occluded and suppuration occur around it, a deep cellulitis is apt to follow; but it is quite rare. The same may be induced by septic matter received through the lacerated surface and retained in a lymph-space, which is the more common cause of puerperal pelvic cellulitis, but also seldom occurs. Each of these states has its peculiar line of evolution, and consequently presents its individual injuries.

But it is with the more chronic progress that we are here particularly concerned. Laceration having extended laterally through the vaginal cervix, the raw surfaces cease to be in apposition, for the divided circular muscular fibres draw the lateral edges away, the longitudinal fibres draw up the lower edges, and the lochia part the torn faces of the cervix; they therefore do not unite by first intention, but are inflamed, and have a considerable new wasteful cell-formation. Hence a tax on the system, and a reduction on the powers exerted in effecting a return to the normal state after parturition. Thus the whole body is affected; and particularly the sexual system is subinvoluted, the uterus remaining unduly large and heavy; the endometrium thick, soft, œdematous and flabby; the uterine ligaments and pelvic fascia lax; the vaginal rugæ deficient or absent; the vaginal muscular fibres deficiently contracted; the constrictor of the vagina and the perinæum dilated. Under these conditions, on the woman resuming the erect position, the heavy uterus, deficiently upheld and supported, descends. But the lower part of the anterior uterine lip is attached to the vaginal junction which is connected with the bladder, which anteriorly is adherent to the pubes; thus this lacerated lip is maintained in its normal situation, or is drawn forwards, while the posterior descends, whereby eversion in the erect position is accentuated. In laceration beyond the vaginal junction both lips are thus pulled apart; also the tendency is for the everted faces to rest on the vaginal tissue, and thus to be irritated. Friction on movement now ensues, so that the raw muscular faces and villi are deprived of their superficial cells, and irritation is thus increased. Multiplication of connective tissue cells ensues, and areolar hyperplasia is induced. The gland ducts being thereby compressed, and their orifices closed by new surface cell formation, retain their secretions, become distended, and are seen as cysts up to the size of peas, called glandulæ Nabothii.

By this hyperplasia the raw or granular surfaces have been removed from a condition of apposition to that of permanent eversion, so that they may now present the aspect of a convexity, having a groove running laterally or otherwise, which is the line of laceration, in the centre of which is the opening of the canal.

With a subinvoluted, and therefore heavy, elongated uterus, perhaps anteflexed before pregnancy, and a sufficient support by the broad ligaments, vagina, and perinæum, the body of the uterus may fall anteriorly, and the organ be anteflexed. Far more frequently, however, the subinvolution affects the upholding power of the ligaments, and the supporting influence of the pelvic fascia, vagina, and perinæum. The uterus thus descends to some extent in the pelvis, and takes an inferior axis; but the vesical attachment is firm and persistent, the anterior lip being strongly supported by the utero-vesical connective tissue, and the cervix by the utero-vesical ligaments. It thus becomes perpendicular, the fundus resting on the rectum; fæces, descending, depress the fundus, and press the cervix forwards so that retroversion and perhaps retroflexion are produced. From the subinvolution of the endometrium, perhaps aided by angling of the tubes by the retroflexion, evolutionary disease of the tubes, peritoneum, and ovaries generally follows. Should the laxity be intense, the anterior wall of the vagina with the bladder, the posterior with the rectum, and the uterus become more or less prolapsed, following the curved line of the combined axes of the pelvis.

All of these evolutions are accelerated by induced debility, loss of fat, and of muscular tone; and particularly by increased subinvolution after successive pregnancies.

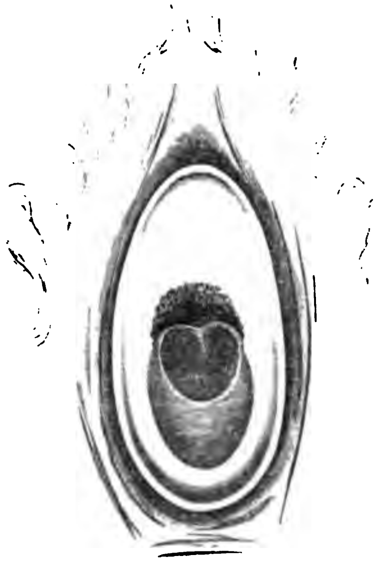
Far the most common cause of malignant disease of the uterus exists in a deep laceration of the cervix with chronic, everted, granular, hyperplastic face. This antecedent condition can be traced in almost every case of cancer originating on the cervix, which forms the great mass of the cases, and which is very rarely found in the non-parous, and then appears attributable to another cause. It is occasionally difficult to distinguish between the granular face, and the same already imbued with the malignant growth, which, however, is usually possible when experience has taught the variety of appearance of these conditions. The constant friction of the granular face against the vagina produces a rapid formation of cells of deficient perfection; and if the cell degeneration persist to the lowest amœboid grade, the excessive large-celled, variously formed cell-growth, called cancer, results. Such malignant disease may not originally develop on the granular laceration, but on the apposite vaginal surface, to which its irritation by friction may be conveyed.

Symptoms.—Leucorrhœa is always present, though it may be masked by the use of injections, which are commonly applied in this state. From this drain on the system there is general debility, which induces neuralgic pains of the nape of the neck and head, and often floating spots and weakness of the eyes. Evolving disease of the tubes and ovaries induces pain in the iliac regions and lumbar spinal column. The subinvoluted endometrium with varicose capillaries, and the obstruction of circulation by flexion in women of sexual force, produce menorrhagia, which reacts in increasing the debility; but in the passionless the spanæmia tends towards deficiency of catamenia and amenorrhœa. Dysmenorrhœa ensues from endometrial inflammatory distension of the capillaries, from evolving obstructive disease of the tubes, and from thickened cystic, perhaps adherent, ovaries; the pressure on the rectum by the retroflexed uterus hinders escape of intestinal gas, and constipation results, accentuating the spanæmia by absorption of fæcal moisture and retention of fæcal gas. From the descent of the uterus, dragging on the stretched subinvoluted ligaments and fascia, there is a marked feeling of bearing down. In anteflexion, micturition is apt to be frequent, and even necessitous and incontinent, and occasionally painful. The retroflexed uterus with laceration with gaping opening often becomes pregnant, when the evolutions of that condition occur; and if the laceration be deep, or accompanied by much granular eversion from marked vaginal friction, abortion or premature labour is frequent. If hyperplasia and a cervical plug block the opening, the semen cannot enter, and there is sterility.

Diagnosis.—The diagnosis is suggested by the occurrence in a parous woman of persistent leucorrhœa, of debility and cerebro-spinal neuralgia, with pain in the iliac regions, and generally a sense of bearing down. On examination the cervix is seen to be lacerated, and more or less raw and granular, and the separated faces of the lips generally everted, with subinvolution, endometritis, flexion, and other conditions of evolutionary disease. Or there may be found a deep unilateral laceration, generally granular, into the vaginal junction, with thickening of the connective tissue of the broad ligament, and cicatricial retraction of the uterus to that side.

Prognosis.—The best hope for the future, if the affection be not healed by operation, is that it may remain stationary; but evolutionary progressive disease is usual. The everted face may heal if the laceration be of the first degree, but the angles very rarely when of the second or third; though epithelium may spread from the edges more or less over its surface. The catamenia is apt to be prolonged; but should it cease, or when it ceases, atrophy of the uterus is to be hoped for; but this frequently is inefficient, and the granular surface does not heal, and the hyperplasia persists, though they may retract and become reduced in extent. In the event of pregnancy occurring, the angles of the previous laceration may be expected to extend: the symptoms may not be more marked after such a subsequent confinement; but perhaps, after a second or third, when the woman becomes the subject of a permanent malaise, till the laceration is cured by operation. No woman with

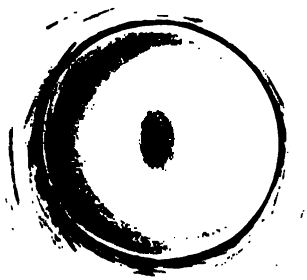
FIG. 81.



Prolapsed atrophic cervix, with laceration and everted granular face. The granulation is quite dry. Aged 60.

granular face from laceration is ever free from liability to the occurrence of cancer thereon; and from the frequency of laceration in civilisation, and the persistency of the granular face, is derived the frequency of malignant disease. This is likely to increase if lacerations be rendered more frequent by the

FIG. 32.



Atrophic uterus with normal os; had seven children; no miscarriages. Æt. 46; menopause one year ago.

too early and unscientific use of the forceps, and in the evolutionary incapacity to bear children normally, whether the lacerations occur with the use of the forceps or not, by their not being completely healed by restitution of the normal form and state.

CHAPTER VIII.

LACERATION OF THE PERINÆUM.

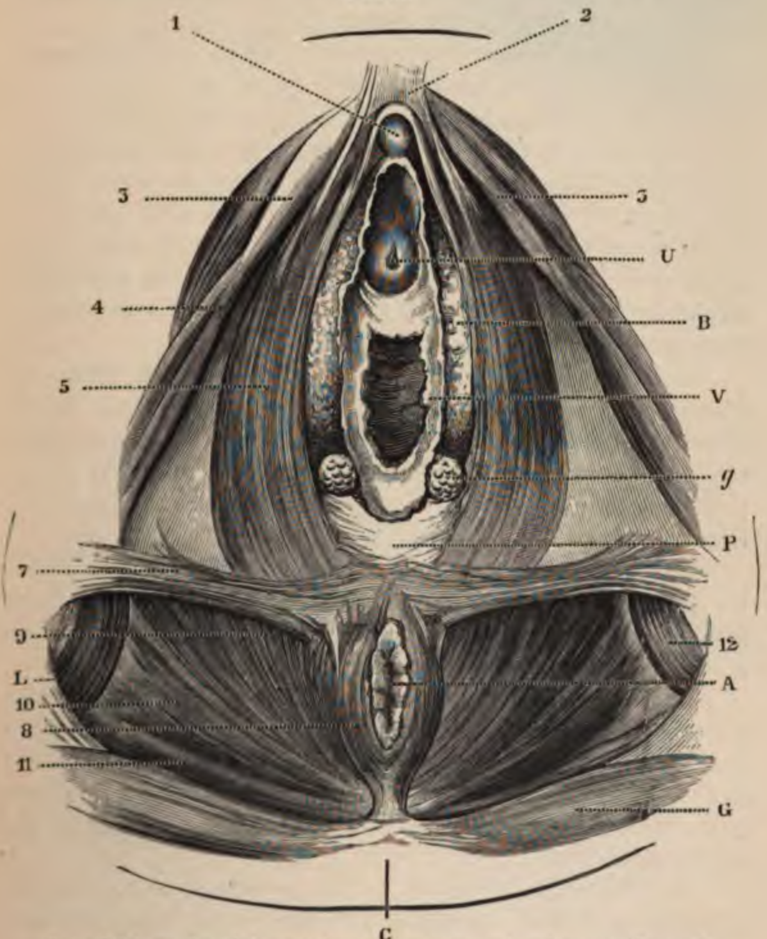
Definition.—The perinæal body is in a greater or less degree lacerated through the tissues from the posterior vaginal commissure at the base of the fourchette towards or into the anus or rectum; or the muscular fibres are subcutaneously ruptured without complete laceration of the external perinæal cutaneous fibres.

The following anatomical description is taken from Savage 'On the Female Pelvic Organs:'—

The Anatomy of the Perinæum.—'The vagina is a musculo-membranous tube, remarkable for its extreme dilatability; its upper end surrounds and is strongly attached to the uterine cervix; its lower end is attached to the ischio-pubic rami. The external muscular wall of the vagina is not separable into coats or layers: two-thirds of the thickness, varying from two to three lines above to five to six below, are made up of this muscular portion. The course of the muscular fibres is circular, spiral and longitudinal, the latter being more apparent at its outer surface; some of these, more conspicuous than the rest near the vaginal ring, are the levatores vaginæ (Luschka). The inner third consists of a dense connective lining membrane inseparably united to it. Elastic elements everywhere pervade this musculo-membranous structure, forming an enormously dilatable channel of communication between the external genitals and the uterus.

'The perinæal body is covered by vestibular mucous membrane at the post-vulval commissure and muscular striæ prolonged anteriorly from the superficial sphincter ani, which go partly to the skin, partly to the compressor bulbi muscles. A figure of 8 interchange of fibres Savage has never been able to make out. Midway between the posterior vulval commissure and the anus those perinæal structures, which meet there, become as it were fused together by a great accession of elastic

Fig. 33.



Superficial muscles of the anterior and posterior perinæal spaces (*Savage*). 1. Clitoris. 2. Its suspensory ligament. 3. Crura clitoridis. 4. Erector clitoridis muscle. 5. Bulbo-cavernosus muscle. 7. Superficial transverse perinæal muscle. 8. Sphincter ani-externus. 9. Pubo-coccygeus muscle. 10. Obturato-coccygeus muscle. 11. Ischio-coccygeus muscle. 12. Obturator externus muscle. U. Urethra. B. Bulbus vestibulus (left side). V. Vagina. *g.* Vulvo-vaginal gland. P. Perinæal body. A. Anus. G. Gluteus maximus. C. Coccyx. L. Larger sacro-sciatic ligament.

tissue, without altogether losing their identity; the result is a body at once highly elastic and resistant. The integrity of the female perinæum depends entirely on this perinæal body; it is, besides, a centre of attachment for:

'1. The ligamentum ischio-perinæi, which is an extremely resistant aponeurotic band attached by its outer ends to the rami of the ischium, somewhat in front of their tuberosities; the internal ends are confounded in the structure of the perinæal body. This structure is the resultant of the union of the two layers of the superficial perinæal fascia with the lower border of the perinæal septum: the cutaneous and membranous layers are here closely adherent; many of the superficial terminal fibres of the muscles which meet at the ano-vulvar portion of the perinæum are skin fibres.

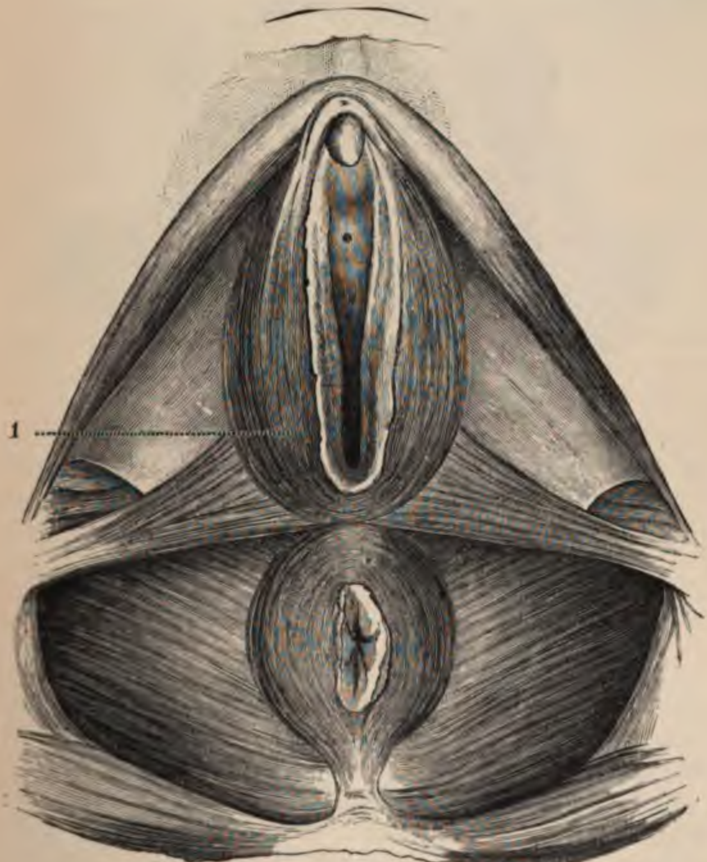
'2. The superficial transverse muscle of the perinæum which arises from the ramus of the ischium in front of the tuberosity, and from the anterior aponeurosis of the perinæal septum, and is inserted into the perinæal body and skin of the perinæum in front of the anus. These muscles therefore pull directly outwards.

'3. The anterior end of the superficial sphincter ani muscle, its deep and cutaneous terminations, of which the superficial portion is entirely cutaneous; the deep portion arises from the tip of the coccyx, and is inserted into the perinæal body.

'4. The median portion of the bulbo-cavernosus muscle, which arises from the perinæal body and from a considerable portion of the anterior aponeurosis of the perinæal septum; and is inserted into the crus of the same side by a thin slip, and occasionally a broader expansion, above and in front of the adjoining muscle.

'5. The perinæal septum below the vagina, which consists of a front and back aponeurosis and intervening muscular fibres (deep transverse muscle). The two aponeuroses are essential components of the structure. It is attached externally to the greater part of the pubo-ischiatic osseous margin, behind the crura clitoridis, from the attachment of the sub-pubic ligament in front to a point below where the tuberosity of the ischium begins. The lower fibres (transverse) meet each other below the vagina. The remainder of the septum resembles in the mixed arrangement of its fibres and their intimate relations to the aponeuroses, the coats of the vagina, of which indeed the septum altogether may be considered the continuation, with upper oblique and lower transverse fibres superadded.

FIG. 34.

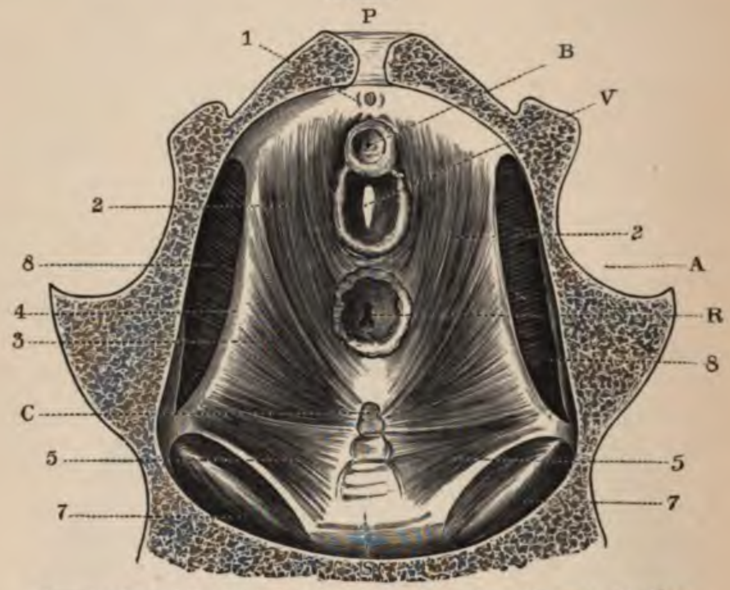


1. Bulbo-cavernosus muscle, showing the constricting transverse muscular fibres surrounding the posterior commissure of the vagina (*Savage*).

'6. The inner (median) fibres of the ischio-coccygeus muscle.

'7. And a few muscular striæ, chiefly cutaneous, interchanging between the central ends of the superficial sphincter, superficial transverse, and bulbo-cavernosus muscles.

FIG. 35.



Muscular floor of the pelvis denuded of fascial coverings (*Savage*). B. Neck of bladder. V. Vagina. R. Rectum. P. Pubic symphisis. C. Coccyx. S. Sacrum. A. Acetabulum. 1. Anterior vesical ligaments. 2. Pubo-coccygeal muscle. 3. Obturato-coccygeal muscle. 4. Ilio-pubic line of origin of the latter. 5. Ischio-coccygeal muscle. 7. Pyriformis muscle. 8. Obturator muscle.

'The middle and posterior aponeuroses of the perinæal septum afford abundant points of attachment to adjoining muscles; the former to the bulbo-cavernosus muscle and superficial transverse muscle of the perinæum; the latter to the pubo-coccygeus muscle. The external vaginal longitudinal fibres occupying the lower half only of the vagina terminate in and are intermixed with the inner fibres of the pubo-coccygeus muscle. The pubo-coccygeus muscle arises from the inner surfaces of the pubic bones by distinct muscular strands, its median fibres descending by the side of the urethra and vagina, some of them turning in between the vagina and rectum to meet similar fibres from the opposite side in the perinæal body; another more outward series of fibres turning in beneath the rectum with those of the other side forming muscular loops, intermixing with the lower circular fibres (internal sphincter) of the rectum; the remaining fibres still more outward joining their opposite fellows at a sort of median raphé, to be finally inserted into the sides of the last bones of the coccyx.

'Constriction of the vaginal ring is produced by the pubo-coccygeus muscle. This muscle, after macerating the piece in carbolic water for a short time, can be lifted away from the septum, which is then seen to be the vagina continued on to its osseous attachments.

'The muscular fibres of the perinæal septum, like those belonging to the rest of the vagina, are for the most part organic.

'The length of the vagina is shortened through its relations with the ischio-pubic muscles and the perinæal body, by which it is contracted into the form of a narrow ring at a short distance from its osseous attachments. The perinæal septum is the result of this arrangement.

'The posterior fold of the broad ligament derives a part of its muscular platysma from the upper and back part of the vagina, where the surfaces pass off on each side, converging and ascending to meet the lower platysma fibres from the posterior surface of the uterus, also going into the broad ligament.

'The uterine attachments of the vagina are entirely muscular. They surround the cervix, in the cortex of which they gradually lose themselves as far as the uterine body. This attachment commences in front sooner than behind, so that the posterior uterine labium projects more than the anterior one into the vaginal cavity. Some of the lateral vaginal fibres pass on into the utero-sacral ligaments. Externally the vagina and uterus appear continuous, no surface indication defining the limits of the above attachments.'

Before the birth of the first child the fourchette, which is cutaneous, persists, but gradually becomes less prominent; in the first confinement it is either lacerated, or so dilated that it falls back.

Condition.—Three degrees of perinæal laceration are recognised. The first extends through the transverse fibres of the pubo-coccygeus muscle, which, as above described, is practically part of the vagina. These fibres are very liable to be lacerated subcutaneously. The capability of intentional constriction of the vagina is thus lost, and the opening is lax.

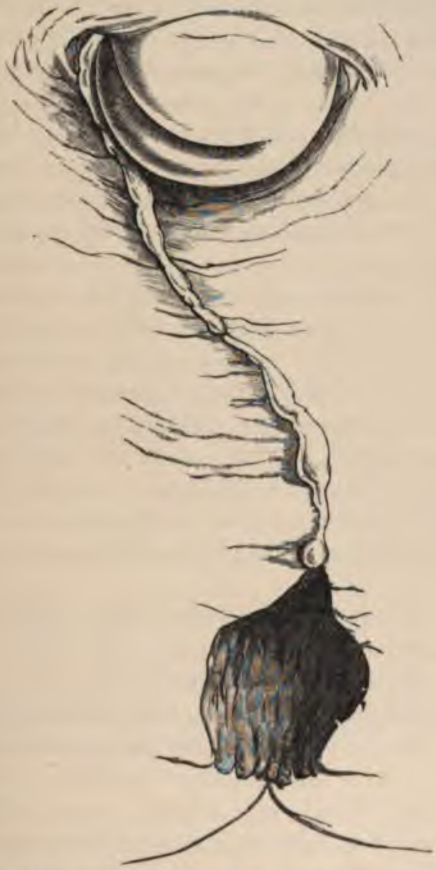
The second into the perinæal body short of the anal sphincters. Thereby the perinæal body which forms the basis of the pelvic floor is divided into two parts; the ischio-perinæal ligament loses its internal adhesion, and this powerful part of the pelvic floor is disabled; the median portion of the bulbo-cavernosus muscle pulls each side of the separated perinæum forwards and slightly outwards; but, most important of all, the perinæal insertions of the superficial transverse perinæal muscles are loosened, so that they pull the separated halves of the body directly outwards. The result is that the vaginal opening is extended in length by the laceration, and is dilated by the traction outwards, particularly of these transverse perinæal muscles; the opening is without constrictive power and gapes; in the erect posture the vaginal walls tend to prolapse; in the recumbent position, the air enters and the canal is subject to the atmospheric pressure of nearly 15 lbs. to the square inch.

The third degree extends through the sphincters of the anus, and more or less up the recto-vaginal septum. Besides the before-mentioned tractions, the anterior ends of the sphincter ani muscle lose their contiguous attachment, and the continuous circular fibres are torn through; thus the two sides of the muscle retract towards the tip of the coccyx, and power over the retention and passage of the fæces and gas is lost.

Unsutured, none of these lacerations heal by first intention, but by extension of epithelium by inflammatory granulation; thus cohesion of the separated surfaces never occurs, but only such contraction as takes place in the new connective tissue cicatrix. Thereby in laceration extending through the anal sphincters the thin edge of the recto-vaginal septum is shortened, and solid fæces may be retained; but there is no control over descending liquid fæces and gas, which escape according to the superior peristaltic contraction.

Causes.—The causation is either on the part of the mother or the child. On the part of the child there may be excessive or disproportionate size, whether from a very large normal child, ossification of the bones of the skull, hydrocephalus, or abnormal presentation, as of the face. From deficient capacity of dilatation on the part of the mother such laceration may take place from rigidity of the lower vagina and perinæum in the young, or in a primipara of advanced age;

FIG. 35A.



Unilateral cervical laceration deep into right vaginal junction, from which is a cicatrix down the posterior vaginal wall to a laceration through the perinæum, and high above both anal sphincters, exposing the rectal mucous membrane. In a primipara, æt. 36, the forceps were said to have been applied when there had been scarcely any pains. (See fig. 108.)

or rapid delivery in the second stage, either by the maternal powers or with the forceps.

Mode of Causation.—The pressure of a child of undue size in labour coming on the perinæum may be long resisted by the perinæum, but eventually the expulsive force may be greater than the capacity of resistance, and the part be lacerated to some extent; the pains recurring, the child is forced onwards and is expelled, prolonging the tear to the extent required for its passage.

Or, on the part of the woman, the pains may be of the kind which Playfair describes as a storm of uterine contractions in precipitate labour, when the uterine force overpowers resistance, and the child is rushed through the vaginal opening with perinæal laceration.

But while rapid delivery may thus be on the part of the woman, certainly in these times of deficient power of civilised woman to effect unaided parturition, the assistance which art may be required to afford to her cannot in some cases be acquitted of following in the path of precipitate labour, by causing the passage of the child with the aid of forceps with undue rapidity through the external passages. Thereby the structures of the perinæum are not submitted to the gradual dilatation which Nature indicates, but sudden stretching induces their rupture.

Progressive Evolutionary Disease.—The effects of lacerated perinæum subsequent to parturition are first that a raw surface is exposed to the influence of the lochial secretions, of which the cells must be in a state of necrosis, only requiring the introduction of putrefactive germs to render them septic, to which the external site under the existing conditions renders them peculiarly liable. Should this infection occur, the temperature rises and the process of involution of all the structures affected in gestation and parturition may be hindered or stopped; thus puerperal septicæmia may result, with such local manifestations, as diphtheria, as may be the character of the infecting bacillus. Such febrile actions follow their individual power and tendency.

The feverish condition having subsided, the lacerated parts heal by inflammatory granulation; and finally there is deficiency of the pelvic floor and excess in size of the vaginal, and it may be of the rectal, opening. The walls of the vagina may thus protrude and carry with them the bladder or rectum, to which they are densely attached. Should the anal sphincters also be lacerated, the rectal mucous membrane is also exposed, and is irritated by friction and cicatricial contraction. The vagina is now pyramidal in form; and while by the original inflammatory increased temperature involution is decreased, on rising from bed the heavy subinvoluted uterus drags on the deficiently contracted broad ligaments and descends. But the whole pelvic tissues, muscular, fibro-elastic, and connective, have been super-developed in gestation, overstretched in labour, and are similarly subinvoluted and unfit to sustain the generative structures, and these bear downwards. The habitual binder for the preservation of the figure of civilisation accentuates abnormal gravity, and hinders normal contraction of muscular fibres.

In laceration up to the sphincter ani, the vaginal walls, unsupported by contraction at the vaginal opening, subinvoluted and lax, become depressed, and bring with them the bladder and rectum, so that there is some degree of vesicocele and rectocele. But the longitudinal muscular fibres of the vagina are continuous with and indistinguishable from those of the uterus; and as the vagina descends, so is their traction on the neck of the uterus, which thus occupies an axis of the pelvis below the normal. The uterus thus becomes perpendicular, retroverted, retroflexed or prolapsed, in proportion to the degree of descent which its weight and the subinvolution of the broad ligaments, pelvic connective tissue, and perinæal laceration permit.

This descent of the vagina is not usual when the laceration extends through the anal sphincters; for, being relieved of the backward force and connection with the sphincter ani muscle, the superficial muscles pull each part of the perinæal body outwards, and the cicatrices of the lacerated surfaces are deep and strong, external to the lines of the nymphæ and of the anus, whence the longitudinal muscular fibres of the vagina draw it upwards. Thus the uterus is not dragged downwards by descending vaginal walls; and it does not prolapse, unless the broad ligaments be so subinvoluted and lax as to be unable to hold it up, which is not usually the case, for their involution and contraction are not counteracted.

Thus in laceration of the second degree the uterus assumes a lower axis in the pelvis, and becomes perpendicular, retroverted, and retroflexed; the bladder descends with the anterior vagina, and the rectum with the posterior vagina; and, the forces continuing, the uterus may prolapse.

But in laceration of the third degree through the anal sphincters, these vaginal, vesical, rectal and uterine descents rarely occur.

Symptoms.—The symptoms are a general sense of bearing down from descent of the uterus, the anterior and posterior vaginal walls, and of pain in one or both iliac regions from dragging on the osseous attachments of the broad ligaments and ovaries from uterine descent. Should the anal sphincters be ruptured, the gas and fæces, especially when liquid, pass incontinently; and if the laceration be to a slightly less extent, or the valvular cicatricial contraction of the recto-vaginal septum be greater, there may be little annoyance unless with diarrhœa. Micturition may be frequent from descent and malposition of the bladder.

Diagnosis.—On examination in the side position, should the vagina gape so that air enters, it is certain that some degree of laceration of the perinæum, apparent or subcutaneous, exists. In the farther degrees the condition is evident.

Prognosis.—A lacerated perinæum never heals unless suitably sutured, on account of lateral muscular retraction.

The prognosis is dependent on the extent of the laceration, and the degree of the inflammatory action in the puerperal state. If they have been so great that extensive deep cicatrices are formed, the superior structures are retained in position by retractive new connective tissue formation. If the inflammation have been less in degree, and the pelvic connective tissues have been little injured, and only suffer from their excessive stretching in labour, but subinvolution persist, the future conditions are liable to be those of continuous descent, so that the uterus is retroverted, retroflexed, and finally it and the organs to which it is attached, the bladder and rectum, are to a greater or less extent extruded through the opening; and this is accentuated by the degree of descent and dragging by the vagina on the uterus, and the abdominal pressure as more or less increased by tight stays or laborious work. Thus the cases with healthy recovery are apt to eventuate in conditions of greater severity than where inflammatory action has produced deep cicatricial contractions. This does not apply to the influences that art may exercise over them, whereby the positions are reversed.

The first and second degrees are usually stationary in subsequent parturition; but in laceration through the sphincters the thin cicatricial border of the torn recto-vaginal septum is likely to yield to some extent in each succeeding labour, whence ensues for a time less power of retention of fæces.

CHAPTER IX.

SUBINVOLUTION.

Definition.—Subinvolution is an evolutionary state in which the various structures, hypertrophied in pregnancy and stretched in parturition, have failed to return to their normal retracted state, and consequently remain lax, unduly heavy, and inefficient to properly perform their normal functions.

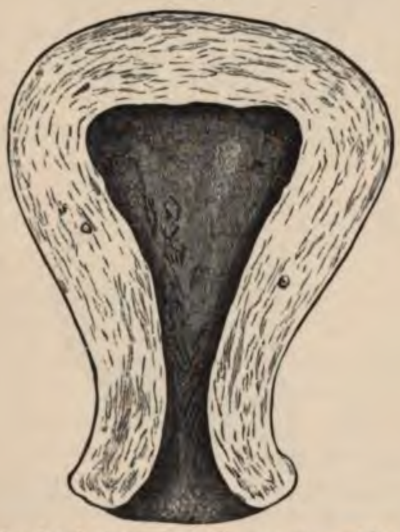
Condition.—The parts liable to be thus affected are the uterus, the abdominal walls, the peritoneum and uterine ligaments, the pelvic fascia, the vagina, the perinæum, the breasts, the heart and blood; and thus the nutrition of the rest of the system.

During pregnancy a true hypertrophy of these organs and structures takes place.

After the birth of the child the uterus at once contracts, and during the ensuing six weeks the larger muscular fibres of pregnancy should undergo fatty degeneration, and be absorbed; new, small, non-pregnant muscular cells be formed from round granular cells, contract, and thus restore the uterus and its cavity to the normal non-pregnant size and length, and a new lining mucous membrane grow. In subinvolution this process is arrested, the fatty degeneration proceeds, but the absorption is deficient; the formation of new muscular fibres is limited, and they are imperfect. The large number of round cells is increased, but they do not advance in development; or advance deficiently. The mucous layer remains thickened and hyperplastic.

The state of the subinvoluted uterus is mainly one of two kinds. The first is where the causation of the cessation of involution has been so virulent, probably vigorously septic, or the constitutional or uterine debility so marked, that while considerable fatty degeneration has occurred with some absorption, there has been practically no reformation of new muscular fibres. Thus the uterine walls are lax and flabby, the endometrium is shreddy, thick, and œdematous, the old glands not being completely removed, and the new being deficiently formed; the arteries tortuous, and the veins varicose, the cavity long and dilated. The whole uterus is thus large, congested œdematous, and flabby.

FIG. 36.



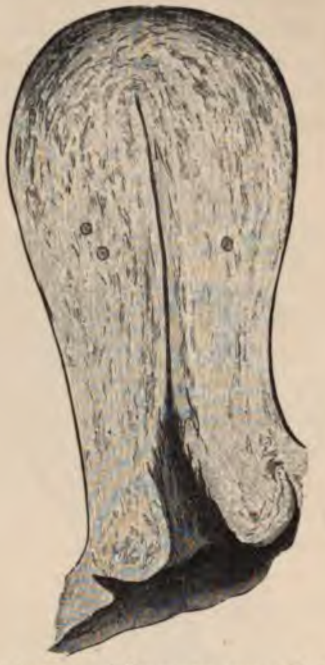
Section of subinvoluted uterus of flabby structure, with cavity enlarged throughout. The cervix is lacerated, and the lips everted. (*The Melbourne University Museum.*)

Later, the interstitial tissue may contract as well as the vessels, and the organ remain large and flabby, but cease to be congested. The os may be normal, but the cervix is almost invariably found to have been lacerated, and to be granular.

The second variety is where the arresting process has been milder, when the old cells have not been absorbed, but new muscularfibres have formed; so that the wall of the uterus is much thickened and hypertrophic; yet the cavity remains elongated, and its sides compressed by the hypertrophic walls.

The cervix is probably lacerated in a moderate degree, but the face is granular, hyperplastic, and irritable.

FIG. 37.



Section of subinvoluted uterus of dense structure, with lacerated cervix and everted granular hyperplastic lips. (*The Melbourne University Museum.*)

During pregnancy the abdominal wall has been enormously distended, and the change from the tense muscularity of the virgin to the flabby laxity of the multipara is frequently very marked. The recti are often separated, and the central longitudinal aponeurosis is stretched and feeble.

The uterus and vagina form a continuous genital canal, through which the muscular fibres are persistent, and have been stretched by the passage of the same body. But the body of the uterus has in addition contained the liquor amnii, so that its required contraction is much greater than that of the parts below. In this condition it fails to attain to this contraction, and remains elongated and unduly heavy. The ligaments, composed of muscular fibres, elastic and connective tissues, fail to recover their tone and are lax, the peritoneum remaining flabby. The circular and longitudinal muscular fibres of the vagina do not recover their power of contraction, and the walls thus are lengthened. The perinæum is shortened, and the sphincterial action at the vaginal orifice ceases. The pelvic musculo-elastic-connective fascia is flabby, and no longer duly supports the sexual organs. The breasts have lost their rounded form, and dangle. The heart has not contracted from the hypertrophic, enlarged, puerperal state; and the blood retains too many white corpuscles in proportion to the red. The woman's body is paler, flabbier, and deficiently nourished.

Causes.—The causes are any state which interferes, during the month after parturition, with the healthy vital changes which effect the return from the pregnant to the non-pregnant condition.

Such causes are—

(1) Local injury in labour, especially to the uterus;
(2) Septic infection;
(3) Undue abdominal pressure; and
(4) General debility.

The Mode of Causation.—(1) Local injury in labour, especially to the uterus, is by far the most frequent cause, which is almost always laceration of the cervix. This injury having occurred for reasons described under that heading, the raw surfaces of the tear at once affect the nutrition of the part. Should they become septic, the temperature and pulse rise, and healing processes occur with difficulty under these conditions. The attraction of nutrition is at once towards the raw faces, which do not heal by first intention for reasons elsewhere described; and a discharge of inflammatory sero-muco-pus occurs, which is a drain on the circulation of the uterus. On rising in ten days, the eversion of the faces is increased by the upright position, and the irritation and discharge are accentuated, so that involution continues to be impeded on walking, and friction of the raw surfaces against the vagina accentuates the local congestion. Thus the local nutrient and absorbing forces, which should be confined to the process of involution, are attracted to the lacerated cervix at the expense of the body, with the result that the involution of the latter is deficient.

When the eversion of the split faces has not occurred, as in unilateral laceration, subinvolution seldom is found; and, also, seldom in laceration of the first degree, in which the tear extends only in the face of the cervix, and the circular fibres are not split, or even in which they may be torn; but there is no eversion, since the external lateral cervico-vaginal wall is complete, and there is no friction on movement.

Laceration of the perinæum with septic action induces a similar influence on the involution of the vagina, so that it remains lax, and has lost the power of contraction of its circular muscular fibres. At the vaginal orifice the power of contraction is lost by laceration of the transverse fibres of the pubococcygeus muscle, and in the erect posture the descent of the lower vagina drags on the upper part, and impairs involution of the subvaginal musculo-connective tissue. But when the vagina has been extensively lacerated in its length there need be no subinvolution or descent, for the inflammatory cicatrix may create a line of strong and deep cohesion, and thus form a supporting band. Thus with very deep unilateral cervical laceration, laceration through the whole length of the vagina, and complete laceration through the perinæum extending to above the rectal sphincters, there need be no subinvolution. With a milder tear and eversion the vagina may be subinvoluted, lax, flabby, and without power of muscular contraction.

(2) In septic causes the os may be normal, but the uterus is subinvoluted. After the labour there has been retention of some portion of the placenta, adherent or detached, or of clots which have become septic, and the temperature has been raised. The process of degeneration, absorption, and restitution of cells has been arrested, and has not been subsequently completed, subinvolution persisting, as well of the lining membrane as of the muscular elements, with excessive quantity of the interstitial cells.

(3) Undue abdominal pressure accentuates the preceding influences, and may of itself induce subinvolution. When the cervix is lacerated, the tight post-partum abdominal bandage depresses the uterus, and tends to evert lacerated surfaces, so that the irritation is increased, and an angle of flexion at the

uterine junction may be induced by depression of the body, while the cervix is sustained by the vaginal attachment. Also, the compression of the uterine body must in any case interfere with free circulation, and thus with the involuting processes. Later, the stays maintain the influence, and by constricting the upper abdominal walls the intestines are forced into the lower segment, so that undue pressure prevents the lower part of the recti from contracting, and thus the pendulous abdomen is produced. The presence of the lowest structure of the body, fat, increases the desire for a tight binder, and renders its action more injurious.

(4) In cases of general debility, as in excessive child-bearing, where a weakly woman is constantly pregnant or suckling, the capacity of involution may be deficient; also in some cases of organic disease of other organs, as in phthisis, or in an attack by an exanthem, coincident with the puerperal month, but much less generally in the absence of laceration with a raw face than would be supposed.

The uterus being the chief organ concerned in pregnancy and parturition, it naturally attracts the greatest attention, and thus the term 'subinvolution' is generally referred especially to it. But many other structures, and indeed the whole body, participating in the parturient process, are liable to be similarly affected; and what arrests the involution of the uterus similarly affects them. Thus the drain of leucorrhœa from the lacerated faces, and from the congested, varicose, œdematous, hyperplastic mucous membrane affects the nutrition of the whole body. In the erect posture the heavy uterus drags on the ligaments and the peritoneum, which thus remain elongated. The vagina is subinvoluted, as described, through laceration of the perinæum, and also by its intimate relation with the uterus, since they form a continuous genital canal through the uninterrupted connection of their muscular fibres, of which the perinæum and the pelvic fascia form a part. The sympathy between the uterus and the breasts is most intimate, as shown in their development at puberty, in earliest pregnancy, and in the formation of milk after the uterus is delivered of its child. Thus what affects and weakens the uterus debilitates the breasts. A continuous drain from any part cannot but weaken the blood, so that with persistent leucorrhœa it is difficult for it to regain its non-pregnant quality. The heart should undergo a change from the hypertrophy of pregnancy to the smaller, firmer organ; but debilitated blood arrests this change, so that it remains flabby and subinvoluted. And similarly the remainder of the body is deficiently nourished and is subinvoluted, which the continuous drain of leucorrhœa, the lactation, often excessive from deficient satisfaction to the child from the poorness of its quality and perhaps excessive watery quantity from frequent excitation by suckling, neuralgia from nerve-debility, and, later, menorrhagia from the varicose state of the uterine veins, maintain. The woman becomes anæmic, neuralgic, and a constant invalid.

Progressive Evolutionary Disease.—The drain on the system from excessive secretion by the hyperplastic endometrium produces debility, neurasthenia, and cerebro-spinal neuralgias. It is not rare to find women whose temper, sight, memory, and minds have become affected, perhaps intermittently, from the persistence of this condition, and they become thin, sallow, and melancholic.

The flabby endometrium is unfit for the due nutrition of an ensuing pregnant ovum, whence deficiency of development and degenerative changes in the decidua; in the chorion, in the form of hydatidiform degeneration; in the placenta, of rupture of varicose vessels leading to hæmorrhages, and threatened incomplete abortion, with subsequent placental adhesions; or complete abortion, with recurrent subinvolution. From deficient nutrition of the ovum resulting from the feeble or low inflammatory decidual development, the fœtus may be deficiently developed, whence hydrocephalus or spina bifida, or a generally weak child.

In pregnancy the muscular cells are liable to imperfect formation and strength, so that their contractive power of expulsion in labour is deficient; but in this state the resistance is also apt to be, for the same reason, feeble, so that the child may readily pass, provided there is no special force required in relation to the expulsion of a child large in proportion to the pelvis of the mother, when the contractive power is inefficient.

After the birth of the child the muscular fibres fail in completeness of clonic contraction, so that the cavity is liable to remain large, and the walls flabby; thence, retention of placental pieces or of clots, which may become septic and induce puerperal septicæmia; and phlebitis, thrombosis, and embolism, or pelvic cellulitis, from defective nutrition of the sinus-clots, or their septic infection.

The continuous formation of feeble cells by the corporeal or cervical glands tends towards the amœboid type, and thus to cancer.

The body being long, heavy, and flabby, usually flexes at the cervico-corporeal junction; should it be well placed, and high in the axis of the pelvic brim, the body falls forwards, is horizontal and anteflexed, lying on and pressing the bladder, which may thus become irritable, congested, and its mucous membrane inflamed, secreting muco-pus; but if it descend to a lower axis, whether by the influence of subinvolution of its ligaments or supports, accentuated by abdominal pressure, it falls backwards, as is described under retroflexion; and its evolutions are apt to occur.

By its descent it carries with it the upper vagina, so that the lower, by duplication of folds, is liable to present at the vulvar orifice in the form of vesicocele or rectocele, or both. Should farther descent occur, prolapse of the uterus, carrying down the vagina with it, may ensue. The presence of the uterus in the vaginal opening further dilates it, stretching the constricting muscular fibres, and pressing back the perinæum. The progress and influence of such descents are aggravated by the usual coincidence of the granular faces of lacerated cervix.

When the cause is rather laceration of the perinæum, the lower vagina is deficiently supported, and the lower anterior and posterior walls bulge inwards and downwards, thus descending. The vaginal longitudinal muscular fibres are continuous with those of the uterus, and the descent and duplication of the lower structure cause a drag on the cervix, producing some descent of the uterus, which comes to occupy an axis of the pelvis below the normal. The uterus is thus first perpendicular, and as the centre of gravity, gradually in the action of descent, comes to fall posteriorly to the base of the cervix, the fundus falls backwards, and becomes retroflexed. Farther descent is dependent on the degree of subinvolution of the broad ligaments, and the upholding and supporting structures of the uterus.

The effects of subinvolution of the blood are general deficiency of nutrition, especially of the nerves and muscles: and of the latter, that of the heart is the most marked and serious; thus the action is feeble and slow, unless in a state of excitement, easily induced by slight emotions, or nerve actions which should be of little importance, after which the reaction is excessive: thus sense of faintness is frequent, with giddiness from feeble brain-circulation; and the sight is apt to fail from deficient nutrition of the eyes and brain; the memory also fails, and perhaps the mind. It is in this condition that chloroform is peculiarly dangerous, by enhancing the feebleness of contraction of the muscular fibres of the heart, so that its force decreases, and its action becomes slower, and presently ceases; thus, for reasonable safety, the administration of ether as an anæsthetic is essential. This state of subinvolution with regard to the influence of chloroform is antithetical to that of the heart-hypertrophy in pregnancy and parturition, when, for that reason, chloroform is usually particularly well borne; but when subinvolution is antecedent to the pregnancy, it is safer, in parturition at least, to mix ether with the chloroform.

The nutrition of the kidneys and liver suffers from the feeble quality of the blood, and its reduced force of circulation by the heart, so that degenerative changes in them are common; the liver being frequently found to be flabby, and to extend to the level of the umbilicus; the kidney also may degenerate and become fatty. Diabetes may ensue.

Symptoms.—The patient complains of general debility, sense of faintness, cerebro-spinal weakness, and pain, especially in the back, of bearing down, and of something coming down; perhaps of pain in one or other iliac region from dragging on the broad ligaments, or from evolutionary affections of the ovaries. From pressure of the heavy fundus on the bladder, micturition may be frequent, and painful bladder irritation ensue; and, similarly, if the uterus be retroflexed and the bladder be dragged down. Such heavy retroflexion produces its symptoms of pressure on the rectum, with obstruction.

Diagnosis.—The diagnosis is founded on the increased length of the cavity of the uterus, and its undue size and weight, which effects angling at the junction, and anterior or posterior flexion; in the latter case with descent. The descent or prolapse of the vagina is evidence of the deficient upholding power of the vaginal longitudinal muscular fibres, and of the deep musculo-elastic-connective tissue. The want of strength, the evident poverty of the blood, the palpitation, faintness, and shortness of breath, the nervousness, neuralgias, failing of memory and of sight, and the poverty of the milk as shown in the anæmia, crossness, and ravenous hunger and constant desire for suckling in the child, all point to the diagnosis of subinvolution.

Prognosis.—The expectation with regard to the future is, with removal of continued drain of discharge on the body, of irritation from exposed granular surfaces, rest from child-bearing, with removal of domestic worries and building up of the system, excellent. Otherwise, the prognosis is a continuance for years in the same state, with a tendency towards advanced brain-weakness, and other evolutionary progress.

Yet in advanced subinvolution, even after the complete cure of the chronic subinvolutionary endometritis, the healing of cervical laceration and granulations, and removal of increase in weight, and the nutrition of the body by a course of Weir Mitchell's treatment, the brain-debility may persist; and the recovery from nervousness is but slow under conditions of the utmost removal of domestic cares and excitements. Without the above relief from drain-waste and local irritations, the woman would have been an inmate of a lunatic asylum.

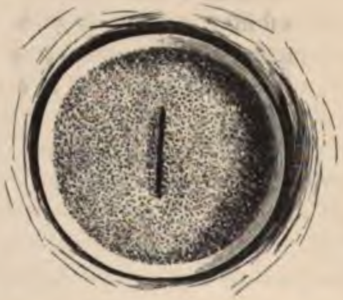
CHAPTER X.

ANTEVERSION AND ANTEFLEXION.

Anteversion.

Definition.—Anteversion is the bending forward of the body of the uterus and the tilting up posteriorly of the cervix, so that the body and the cervix are almost in a straight line and tend towards the horizontal. To effect this position the uterus must be elevated in the pelvis to be enabled to assume an axis anterior to that of the pelvic brim, the fundus lying at the level of or slightly above the upper part of the symphisis pubis, and the cervix almost backwards.

FIG. 38.



Virginal well-developed os with rubbed-raspberry granular face, and areolar hyperplasia compressing the lips.

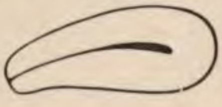
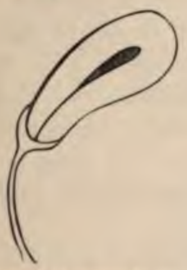
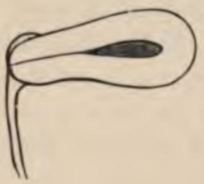


Diagram of position of uterus.

Causes.—Anteversion is only found in well-developed uteri, where there is no angle of feebleness at the junction of the cervix and body, so that the cervix does not bend and become anteflexed; the vaginal cervix and the os may be normal, and the position the result of excessive abdominal pressure, commonly tight-lacing, which depresses the fundus. The opening may be congenitally small, and the vaginal cervix conical from irritative difficulty of drainage inducing contraction of the cervical circular muscular fibres; or congenitally large, or in the parous lacerated, with everted granular tissue and cervicitis, leading on to corporeal endometritis and undue weight of the body, which thus falls. In any case the whole uterus rotates on a transverse axis at the cervico-corporeal junction, and the cervix is tilted up and looks more backwards; and the organ being well-developed, there is no angle of flexion, and the cervix follows the line of the body; or the displacement upwards of the uterus may be caused by an attached tumour, or by one occupying a lower plane in the pelvis; or in great conjugate pelvic contraction with distention

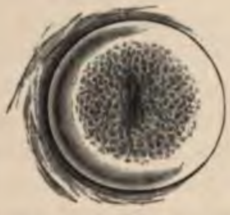


Normal relation of uterus to vagina, showing absence of friction of face.



Anteverted uterus, showing friction of face against the vaginal rugæ.

Fig. 38a.



The face of the above uterus like a rubbed raspberry from friction against the rugæ of the posterior vaginal wall.

of the abdominal walls, the pelvic space is deficient, and the uterus lies over the symphisis pubis.

Progressive Evolutionary Disease.—When the cervix occupies its normal position, lying at an obtuse angle with the vagina, without abdominal pressure there is no friction, for movement of the body of the uterus only induces the face to move slightly almost in the axis of the canal of the vagina, parting its sides. But when the cervix is at about right angles to the vagina, and particularly when the position is maintained by abdominal pressure, the face must at every movement be frictioned against the posterior wall of the vagina (fig. 38A). Should there have been any degree of previous irritation of the face, it becomes yet more irritated, granular and hyperplastic, and higher evolutionary effects are likely to ensue.

The persistence of these causes, combined with the passage downwards of the fæces and their retention in the rectum, may gradually overcome the resistance of the cervix, the descent of which thus occurs, producing anteflexion; an angle, generally at the cervico-corporeal junction, being determined. The strong structure implies healthy development and sexual activity, so that, should marriage and pregnancy not presently occur, the progressive inflammatory pathology of anteflexion of the second virginal degree, if not already present, is liable to ensue. In the case of complication with a tumour the uterine evolution is secondary to that of the tumour.

Symptoms.—The symptoms may be those of pressure on the bladder, in the earlier time perhaps removable by removal of the undue abdominal pressure; but perhaps not so later, when there has been a pathological evolving anteflexion. With the small opening, dysmenorrhœa is present; and when complicated with a granular face there is pain in the back, cerebrospinal column and legs, leucorrhœa, and general malaise.

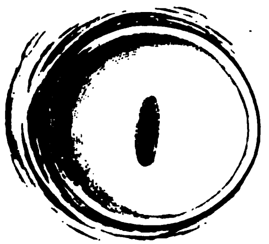
Diagnosis.—The uterus as to cervix and body may be felt to be rather high, and to tend towards the horizontal direction; in the unimpregnated uterus the sound enters the opening and readily passes onward without allowing for flexion.

Prognosis.—If the os be normal and the cause abdominal pressure, on its removal the position becomes normal; and in case of marriage, pregnancy occurs. If the cause be some congenital defect at the opening, if a normal state be not produced, the evolutionary diseases probably result. When the position is induced by the pressure of a tumour the anteversion is secondary in influence to the causation.

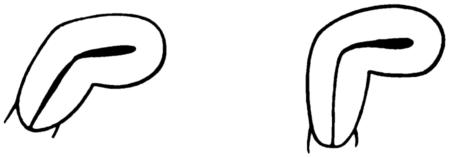
Anteflexion.

Definition.—By anteflexion is meant the excessive bending forward of the uterus—whether of the cervix, the body, or both—so that an angle is formed, which obstructs the lumen of the canal.

FIG. 39.

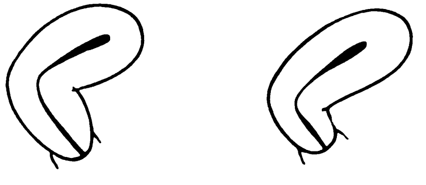


Virginal normal face and opening.



Horizontal body in uterus of good development.

The same with also perpendicular cervix.



The cervix is bent forward, the body is normal. Good development.

The cervix is bent forward, but the angle of flexion is at the middle of the cervix. Good development.

Condition.—The condition is of two main kinds. The first is where the cervix has about its normal position or is perpendicular, but the body is depressed and perhaps horizontal, and the substance of the uterus is usually of good development. In the second, the cervix looks forward and downwards, while the body maintains the normal direction or is depressed, and the uterus is usually feebly developed. Modifications of these conditions also occur.

The condition of the patient is—

1. Virginal;
2. Parous; or
3. Affected with a tumour.

Causes.—1. In the virginal condition the anteflexion is—

A. Evolutionary from anteversion produced by undue abdominal pressure;

B. Evolutionary in a uterus in a state of congenital defect.

2. Parous anteflexion is the product of one of two sources of origin, in which:

(*a*) The os is normal, with subinvolution and chronic endometritis; and

(*b*) The vaginal cervix is lacerated, generally as an evolution of the condition of virginal anteflexion.

Mode of Causation.—1. A. A healthy uterus, occupying its variable normal positions, being subject to adjacent pressures according to the quantity of the contents of the bladder and rectum, is liable to the influences of undue abdominal pressure. If pressure, as stays or dress, compress the waist, as the intestines cannot be forced upward because of the diaphragm and the bony case of the ribs, they must descend. The direction of least resistance would be anteriorly through the more or less variably distensible abdominal wall; but the stays have strong steels which descend over the abdomen to the pubes, and produce an anterior support. A powerful force is thus directed into the pelvic cavity, which is resisted by its contents, and finally by the pelvic floor, which in the virgin is complete, except, as Hart and Barbour have shown, that it is perforated by three slits, which, particularly in the virgin, but little impair its efficiency. Thus the force acts immediately on the fundus, which it tends to depress. The uterus being here assumed to be of normal development, firm in its structure, and therefore also at the junction of the cervix and body, has no original tendency to flex, but rather rotates forward on a transverse axis at its cervico-corporeal junction, effecting anteversion. This, however, cannot usually be long maintained; for the intestines, being forced downwards by the superior pressure on to the posteriorly up-tilted cervix, depress it, when an angle of flexion is formed, in which the body is more or less horizontal, and rests on the bladder, and the cervix looks downwards and backwards, or is perpendicular.

Should this condition be accentuated, there is some descent of the uterus, which takes place in the axis of the pelvis by rotation backwards on a transverse axis at the cervico-corporeal junction, so that the cervix may look a little downwards and forwards, and constipated rectal fæces may force the cervix farther forwards.

Progressive Evolutionary Pathology.—The os being healthy and well developed, the canal patulous, and the angle of flexion but of moderate degree, there is usually an unimportant degree of obstruction and no endometritis. Where the fundus is markedly anterior, the tubes are angled at their junction with the uterus, and thus it may be that tubal obstruction may be presently induced, which may lead to dysmenorrhœa and tubal peritoneal effusion and peritonitis, ovarian thickening and adhesions. But the pressure, if from dress, is intermittent; and there are many hours, as of the night, and if there be dysmenorrhœa, when it is absent. Also the uterus is well developed, so that it is apt to recover itself, and pregnancy may occur before evolutionary organic disease has been induced.

Symptoms.—The symptoms are chiefly those of bearing down, and of something coming down, which, in the virgin, is usually a sense of laxity about the vaginal folds from their duplication from superior pressure, and there may be frequent micturition and irritation from the weight on the bladder. Constipation is probably induced.

Diagnosis.—The cervix is felt to be at an angle to the body, and the os is felt and seen to be of normal size, and without inflammation at its edges or within the lumen. On removal of the stays the organ will resume something of its normal position on slight reposition, unless the flexion be of long standing.

Prognosis.—The expectation of progress is excellent by removal of the pressure, unless in the case of already existing complication of evolutionary disease, which is rare.

The cause of anteflexion:

B. Evolutionary in a uterus in a state of congenital defect includes the remainder of the virginal conditions, which may be persistent after marriage.

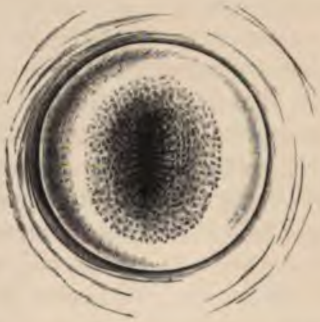
The defects of development in this respect are—

(*a*) A large opening with congenital granular eversion and endometritis in a strongly-developed uterus.

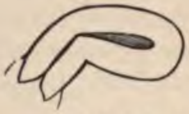
(*b*) A small opening with well-developed or conical vaginal cervix and endometritis in an otherwise strongly-developed uterus.

(*c*) A normal or small opening with a conical or small cervix, and a feebly-developed body and cervico-corporeal junction.

FIG. 40.



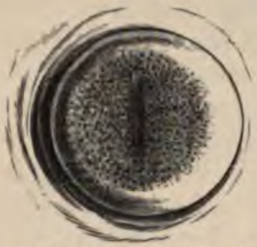
Virginal opening of large development with cervical hyperplastic eversion with granular faces.



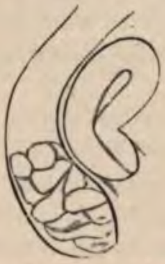
The congested body is horizontal.

Condition.—(*a*) With a large opening and congenital granular eversion and cervicitis the vaginal cervix may occupy the normal position or be perpendicular. The os is large, with everted raw-beef-looking tissue, exposing the corrugations of the Arbor vitæ; and the epithelium may also have been removed from the adjacent edges of the vaginal cervix by friction against the vagina, or by the irritation of inflammatory secretions, and resemble a rubbed raspberry; a plug of cohesive mucus protrudes from the opening; its adjacent tissue is hyperplastic; the external non-granular part of the vaginal cervix is congested; the body is heavy, congested, and horizontal. The sexual activity is marked.

FIG. 41.



Virginal normal opening with granular face from friction, in a girl, æt. 17, with a good hymen and dysmenorrhœa.



The cervix is pushed forwards by fæces retained in the lower rectum.

Mode of Causation.—In this development the exposure of the cervical tissue and friction against the vagina increase the irritability. On the occurrence of the catamenia, the congested cervical membrane protrudes the more, becomes more hyperplastic, and tends to block the mouth, so that the secretions, increased in quantity, find greater difficulty in escaping; whereby the body tends to be distended, and the muscular fibres contract and overcome the obstruction; but irritation, congestion, endometritis, and depression of the body result, with an angle of flexion which increases the obstruction of the canal.

Progressive Evolutionary Disease.—From the friction of the everted, chronically inflamed, granular, hyperplastic cervical tissue against the vaginal rugæ, and the action of the acid vaginal secretion on the alkaline cervical glands, cervical obstruction ensues, which affects the corporeal endometrium. Corporeal endometritis results, with its determined and markedly evolutionary effects on the tubes and ovaries.

The body of the uterus being unduly heavy and lying on the bladder, micturition becomes frequent, and presently necessitous and painful; the bladder is congested and its muscles irritable and spasmic. There follows puffing at the entrance of the ureters, and the flow of urine through them may be hindered; the calices of the kidneys may become distended, and if there be a tendency to lithic or other calculous deposit, it may collect in the kidneys, and suppuration round a stone finally result.

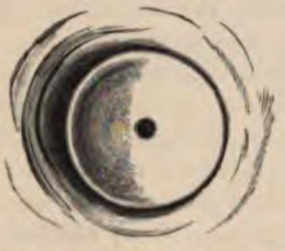
Symptoms.—The symptoms are of a congestive and violent habit, as leucorrhœa during childhood, with bladder and kidney troubles. There are dysmenorrhœa and menorrhagia, the catamenial intervals may be short, the duration of the flow long, and the blood clotted; the health is impaired, the body weakened, and neuralgias of the cerebro-spinal axis are common.

Diagnosis.—The hymen being uninjured, or the woman never having been pregnant, the os is found to be in such an everted and granular condition as otherwise would be imputed to laceration with exposure of the torn faces; and the horizontal position of the body would be attributed to subinvolution. This is negatived by the presence of virginity and the reliable history.

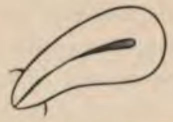
Prognosis.—The prognosis is strongly of progressive, evolving disease, and sterility is certain; yet the position of anteflexion in this condition is less severe than that of retroflexion, which is far more common.

Condition.—(*b*) The second class of virginal defective anteflexion is where the opening is small in a normal or conical vaginal cervix in an otherwise strongly-developed uterus; there is endometritis, and the body is depressed by excessive weight; and there is marked sexual activity. The cervix occupies the normal position, looking downwards and backwards, or later, by evolution downwards; the body is horizontal; the face congested, and frequently angrily granular; the small opening is occupied by a morsel of inflamed and thickened, everted, mucous membrane; the uterus is tender on pressure; the endometritis is of an active character, and leucorrhœa is persistent, though not large in quantity.

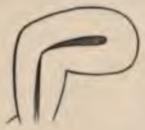
FIG. 42.



Virginal conical cervix and pinhole opening in otherwise strongly-developed uterus.



Anteversion of the same uterus.



Horizontal body and perpendicular cervix from fæcal pressure in the same condition.

Mode of Causation.—From birth the deficiency in size of the opening has prevented the ready escape of the mucus. At the commencement of the catamenia the primary congestion of the lining membrane still farther blocks the os, and on the occurrence of the flow the fluid collects in the corporeal cavity more quickly than it can escape; some distension results, and muscular contraction with pain, and the body is thus unduly weighted, and tends to fall and become more or less horizontal. Moreover, the cavity being full, the vessels cannot readily pour out their contents; the body is thus more or less congested and heavy, obstruction of the mouths of the corporeal glands occurs, and there is general endometritis. The construction being strong, the cervix follows the line of the body, the whole uterus rotating on a transverse axis at the cervico-corporeal junction, and anteversion results. Thus the rectum has become affected; the descent of the fæces depresses the cervix, lower rectal fæcal retention pushes it forward, and the anteflexion angle thus formed accentuates the obstruction. Finally the uterus is left congested, heavy, and anteflexed.

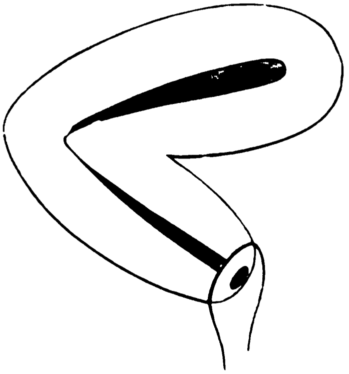
Progressive Evolutionary Disease.—The progressive evolutionary pathology, in view of the sexual activity and the great obstruction to drainage, is vigorously in the direction of endometritis, and thus to disease of the tubes and ovaries. There is pressure by the body of the uterus on the bladder, which may thus become irritable; should any descent of the uterus occur, the bladder is dragged upon, and becomes more irritable. In this causation, retroflexion is common from the dragging backwards by the evolutionarily affected tubes.

Symptoms.—The symptoms result from the sexual activity with obstruction to drainage, and include dysmenorrhœa before and on the first day or two of and often throughout the menstrual period, congestive pains and bearing down, menorrhagia, and more frequent catamenial recurrence, usually also frequent and painful micturition.

Diagnosis.—The condition of anteversion or anteflexion as described is evident. The differential diagnosis of this state of sexual vigour as compared with that of feeble development is founded on the usually normal position of the cervix, which may, however, subsequently become perpendicular and very rarely bent forward, in combination with the presence of active congestion, and perhaps rubbed-raspberry state of the face, and the tendency towards menorrhagia. The evolutionary affections also are more frequent. The sexual functions are vigorous and tend to be inflammatory, instead of being feeble with inclination towards the atrophic.

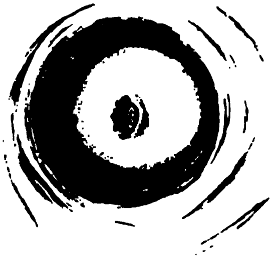
Prognosis.—The prognosis is markedly that of a progressive evolution of disease resulting from the determined congestive obstruction. In case of marriage all the pathological tendencies are accentuated. The sexual vigour increases the secretions, which, previously deficient in escape, create a farther accumulation, and thus an increased tendency to evolving disease of the tubes and ovaries. Pregnancy is always improbable; and in the confirmed condition of small os closed by a morsel of granular everted tissue, and angrily granular hyperplastic face, is impossible.

FIG. 48.



Anteflexed uterus of feeble development, with small opening and almost no vaginal cervix. The vagina is attached at the edge of the small face, especially anteriorly.

FIG. 48A.



Virginal feebly-developed uterus with conical cervix, small opening with granular edge of posterior lip, and anteflexion of body and cervix. The ovaries and tubes posterior; tender amenorrhœa, 8 years. Aged 23.

Diagram of anteflexion of body and cervix of feebly-developed uterus.

Conditions.—(*c*) The third form of congenital deficiency is where the opening is normal or small, with feebly-developed body and cervico-corporeal junction, and conical or small vaginal cervix.

It is quite surprising how frequent it is in civilisation that in women, otherwise splendidly formed, the uterus is deficient in strength of formation and in perfection of detail.

FIG. 43B.

The position of the body is normal; the cervix is anteflexed.

The body is horizontal; the cervix is anteflexed.

The body and cervix almost touch in anteflexion.

The angle of flexion is low in the cervix from low vaginal attachment.

Diagrammatic sections of virginal anteflexion with feeble development, conical small cervix, and small opening.

Mode of Causation.—At birth the body of the uterus is supported by the bladder containing urine; but, on its evacuation, the bladder walls become horizontal by the abdominal pressure, and the body lies on it, so that in a feeble uterus, in which the cervix and body readily bend, an angle of flexion is formed, perhaps to be partly removed on the refilling of the bladder. But, in all directions, development is deficient in the uteri under consideration. The body is thus apt to be unduly depressed by feebleness of structure at the junction of the cervix and body above the upper vesical attachment, so that an excessive angle is there formed; and the vaginal cervix, also feeble, small, and perhaps conical, yields to the pressure of the rectal fæces, and takes an axis downwards and forwards.

The angle of flexion forms an impediment to the passage of the secretions, and the body is rendered additionally horizontal.

If the abdominal pressure be increased by tightly laced stays and weight of skirts, and particularly if any quantity of food or active exercise be taken under these conditions, the depression of the body of the uterus is accentuated. Bending forward, as in writing over a desk at school, increases such abdominal pressure.

Two conditions now operate to increase the anterior apposition of the body and cervix. The first is that the angle of flexion formed at or near the junction of the cervix with the body, at about the level of the inner os, hinders the passage of mucus, so that there is some retention, and the body is heavier, and therefore tends to become more horizontal. The nutrition being feeble, congestion of the whole uterus is not marked, and there is no tendency to descent, which would be additionally prevented by congenital anterior shortening of the vaginal attachment which is here frequent, and facilitates some rotation of the whole uterus on a transverse axis through the cervico-corporeal junction.

The second, that the preliminary congestion of the catamenia puffs the lining membrane at the angle not less than elsewhere; and this puffing farther blocks the lumen of the tube, and increases the difficulty of escape of the increased mucus secretion in the early stage of the catamenia; and pain, irritation, and muscular contraction result, generally to be relieved by the flow of blood, which diminishes the congestive condition of the vessels and mucous membrane, and nerve pressure. The catamenial secretion thus passes the angle of flexion and reaches the cervical canal, where its progress is impeded by the small os, which difficulty is presently overcome in the same manner as higher in the canal. In these feebly-developed uteri, the sexual feeling being low, the nutrition is deficient, and the catamenial discharges small in quantity, but difficult and painful in escape, particularly on the first day. Thus the body is rendered relatively heavy, and tends to fall to the horizontal position; and the cervix flexes anteriorly at the junction, or the whole uterus rotating on its transverse axis at the junction, the cervix looks downwards and forwards.

Progressive Evolutionary Disease.—The accumulation of the secretions, of which the drainage is obstructed by the angle of flexion and small opening, to some extent stretches the cavity of the body and produces irritation, resulting in muscular contraction, congestion, and obstruction at the mouths of the corporeal glands, which may thus become inflamed. But the fluid is, in any quantity, only periodical, as at the catamenia, and the congestion and tension are relieved by the discharge of blood. Thus the corporeal irritation is at first recurrent; and later, by frequent repetition, becomes chronic; but the whole nutrition and congestion are of a feeble character.

The secretion having been forced through the angle of flexion, reaches the cervix, where its escape is hindered by the small os, and, the same process occurring, cervicitis ensues. The cervical membrane near the opening, being thus inflamed, is thickened, and is forced downwards by the pressure from above, so that it tends still farther to block the os. This may eventuate in eversion of tissue, which may become granular; but seldom does so to any extent, because the opening is too small to permit much eversion; but the tissue may be seen to fill the opening, and to be granular. The cervical canal may thus be dilated by the accumulating cervical mucus, which escapes with difficulty either downwards or upwards, and its membrane is pale, anæmic, and dense.

The farther affections of the tubes and ovaries may result from endometritis; but it is most frequent that these uteri, being feebly developed from low sexual habit, undergo feeble catamenial action, which leads in the direction of deficiency and irregularity of the monthly discharge, and so to a still more diminished nutrition and atrophic state both of the ovaries and uterus. Thus intermittence of the catamenia is apt to occur, and perhaps premature menopause.

The condition continuing, the dysmenorrhœa persists, the appetite is impaired, indigestion occurs, and constipation results, the fæces being delayed in the lower rectum. There their moisture is absorbed, and the purity of the blood is impaired; thence arise chlorosis, anæmia, and amenorrhœa. There are neuralgias, pains in the iliac regions, the back, the nape and the head, general debility and malaise, palpitation, and shortness of breath. Evolutionary disease of the tubes and ovaries may occur; but, in this anæmic state, the tendency is to their atrophy.

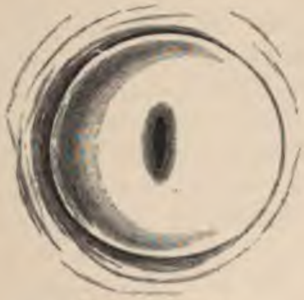
Should marriage take place, sterility is usual; but if, as in the milder form where the os is of normal size, or, if small, yet gapes pregnancy should occur, laceration of the feeble cervix is frequent, and parous anteflexion results. Unless there is laceration, this condition is cured by parturition.

Symptoms.—It is usual that from the first occurrence of the catamenia there has been dysmenorrhœa, generally on the day before and on the first day of the menses; the flow is small in quantity, thin and pale in quality, and apt to be intermittent. The patient tends to be weak and anæmic, and sexual desire is absent.

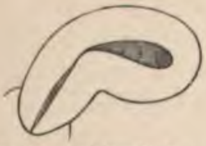
Diagnosis.—The cervix and os are small, deficiently developed and pale. The anterior vaginal attachment is low and short. The cervix points forwards and downwards, and the small body is felt doubled on the cervix. The feeble sexual condition is evident in the small quantity and poorness of quality of the menses, and in the tendency to diminution, to intermittency, and to uterine and ovarian atrophy.

Prognosis.—Should the condition be allowed to persist, the expectation is that the pain at the menstrual period will induce depression of the system and lead to anæmia. Thence result diminished blood supply to the ovaries and uterus; and intermittence of menstruation occurs, and general malaise and debility.

FIG. 44.



Normal parous os.



Horizontal body of uterus from subinvolution. The canal is 3½ inches.

Condition.—2. (*a*) In parous anteflexion, when the os and cervix are normal in appearance, the body is enlarged and subinvoluted and is bent forwards, forming an angle with the cervix and lies on the bladder; the cavity is elongated and enlarged, the cervix tends to the perpendicular. There is endometritis, and catarrhal mucus is usually in considerable quantity.

Causes.—The virginal uterus, with a normal or strong sexual feeling and delayed marriage, may have been anteflexed; and after parturition, from continued weakness of its walls at the junction, it may have resumed its previous position; or in parturition the dilatation of the cervix has been normal, but puerperal septicæmia, autogenetic or heterogenetic, has occurred, and the temperature has been raised, so that involution has been impaired. Thus the body remains unduly heavy, and the endometrium is hyperplastic, the utricular glands are chronically inflamed and secrete excessive catarrhal mucus; or the binder has been continuously applied too tightly; or it may be that the repose in bed has been insufficient, and that the constitution has been previously debilitated, perhaps by excessive child-bearing, or by organic disease as phthisis; that there has been oversuckling; that the work undertaken has been premature and excessive; or that gaiety and tight-lacing, and weight of clothes, effect the same result. Previous endometritis from gonorrhœa or other sexual cause may not have yielded to the natural tendency towards health in the period of involution.

Mode of Causation.—The mode of causation is that, subinvolutionary endometritis persisting, the body of the uterus is unduly heavy and is deficiently supported by the subinvoluted broad ligaments. Therefore it falls, and, the tendency being to the anterior direction, it creates an angle in some degree with the cervix; but as the body is supported by the bladder and approaches the pubes, particularly if the abdominal walls be lax, it rests on it, and there is no descent, and the cervix is not pressed forwards in an inferior axis of the pelvis.

Progressive Evolutionary Disease.—The condition is that of chronic subinvolutionary endometritis and slight angling of the canal, which does not impede drainage, and there is no granular source of irritation at the cervix. The angling does not impede arterial entrance of blood, but may retard the venous return, whereby the body continues heavy, and pressing on the bladder may irritate it and induce frequent micturition. The angling of the tubes at the cornual junction being of a moderate degree, apart from antecedent tubal affection and the influences of abdominal pressure, no ulterior affections occur.

Symptoms.—The symptoms are perhaps menorrhagia with congestive pain, bearing down, frequent and perhaps painful micturition, leucorrhœa, pain in the iliac regions, back, nape or head, and general debility.

Diagnosis.—The diagnosis of this form of anteflexion is founded on the normal state of the os, the natural or perpendicular position of the cervix with the horizontal body. It is evident that the latter is in fault, and that its depression is due to previous habit or excessive weight. The degree of subinvolutionary endometritis is indicated by the non-recurrence of pregnancy, as well as by the increased length of the uterine cavity, the quantity and quality of the mucous discharge, and the presence or absence of menorrhagia.

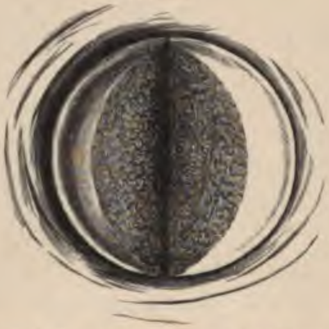
Prognosis.—The prognosis is favourable. Pregnancy will probably occur unless endometritis be marked. The natural tendency towards health, apart from excessive abdominal pressure, frequently effects recovery.

Condition.—In (*b*) the cervix is lacerated more or less deeply, and may look downwards and backwards, downwards, or downwards and forwards, according to the character of development, the body being horizontal; the faces may be granular or have healed, particularly at the edges; the cavity is unduly long; the endometrium is subinvoluted, chronically inflamed and hyperplastic, the glands secreting an excessive catarrhal mucus, and a plug of coherent cervical mucus fills the opening, which is in especial relation to the lacerated surfaces being irritated by friction against the vagina.

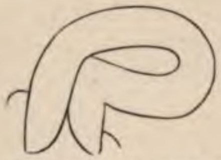
Mode of Causation.—Pregnancy in the case of a small virginal os and anteflexion, frequently with endometritis, is not apt to occur. But the endometritis may be of a mild character or be absent, the opening minutely agape and the semen may enter, it may be after lapse of a long period of marriage. The development of the cervix in pregnancy takes place and the part is prepared for labour. The well-developed cervix, though with a small opening, often normally dilates without laceration;

but the small conical cervix of feeble development, and the small opening with granular eversion and connective tissue hyperplasia, are frequently the causes of the rigid cervix, and almost invariably rupture rather than stretch; and this may be under the use of the forceps, which the necessity of the condition may compel. Any other condition of previous laceration may induce similar results. In these states the edges of the raw faces are pulled apart laterally by the torn circular muscular fibres, and on the inferior borders by the retracting longitudinal fibres, and the raw faces are also separated by the lochia and do not unite; the drain of their discharge is sufficiently enfeebling to hinder involution, so that the body remains unduly long, large and heavy. Should they become septic and the temperature rise, the healing and absorptive processes are the more prevented, for it is difficult for tissues to heal by first intention at an increased heat. These processes are accentuated by the pressure of a tight abdominal binder. The body thus assumes a horizontal position, or resumes the pre-parous state of anteflexion, though by the development of pregnancy and the dilata-

FIG. 45.



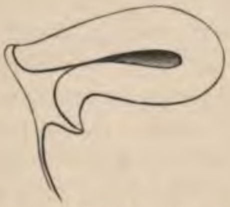
Cervix lacerated to vaginal junction; the faces are everted, granular, and hyperplastic.



Horizontal body and perpendicular cervix, with subinvolution in the same. The canal is 3½ inches.

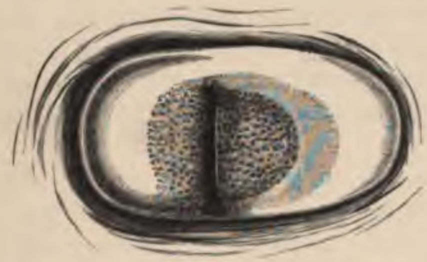
tion of labour the cervix may cease to look forward and downwards, and may present rather downwards. The endometrium does not complete its involution, but degenerates into a state of low hyperplastic endometritis, with abnormal excessive secretion from the utricular glands, and there is continuous irritation of the raw lacerated cervical faces against the vagina.

Fig. 46.

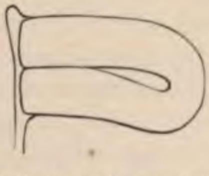


Section of laceration of the cervix, with great hyperplastic granular eversion of both lips, particularly the anterior. The uterine body and cervix are horizontal.

Fig. 47.



Deeply lacerated cervix with flattened hyperplastic granular face and everted hyperplastic cervical tissue of anterior lip.



The same, showing the flattening of the everted lacerated lips against the posterior wall, and anteversion with subinvolution.

Progressive Evolutionary Pathology. — The anteflexion is coincident with the laceration, subinvolution, and endometritis; and the progressive tubal, peritonitic, and ovarian disease thereof has been previously described. The uterus, being thus unduly heavy, and its supports deficient in power by the general subinvolution, is depressed, and may sink in the axes of the pelvis with rotation on a transverse axis through the cervico-corporeal junction, rarely seen except in deficiently developed uteri; but usually the body rests anteriorly on the bladder towards the symphisis, and is thus supported. The pressure on the bladder may produce irritability, congestion, and evolutionary results. If the laceration extend deeply into the broad ligament, particularly with an adherent tube, distension of the bladder, by producing irritation in the angle of the rupture and tension on the adherent tube, may induce frequent and painful micturition and congestion of the bladder. General debility is usual.

Symptoms.—The symptoms are sympathetic pains in the iliac regions, back, nape, and head, from weight, and friction of the granular surfaces on the vagina; leucorrhœa is present; dysmenorrhœa is apt to persist, perhaps with altered quantity of catamenial flow proportionate to the original strength of development of the uterus; micturition may be frequent and painful; the drain of the leucorrhœa depresses the system, and general debility, deficient nerve nutrition, and wasting result; sterility is frequent, from the cervicitis induced by the laceration.

Diagnosis.—The separated faces of the lacerated cervix, always more or less granular, indicate the cause; while the undue length of the uterine cavity, the leucorrhœa, and heavy horizontal body point out the result; the whole giving clearly the diagnostic conditions of anteflexion with lacerated cervix and subinvolutionary endometritis.

Prognosis.—The prognosis is that of the progressive evolutionary disease, and, unless there is healing of the granular faces and curing of the endometritis, is unfavourable; but as the uterus is anteflexed, there is less probability of posterior displacement of the tubes through cornual angling, and congestion of the uterus is less marked than where it has become retroflexed.

3. When anteflexion is dependent on the pressure of a tumour the misplacement is unimportant in comparison with the tumour; on the removal of which it frequently resumes the normal position.

CHAPTER XI.

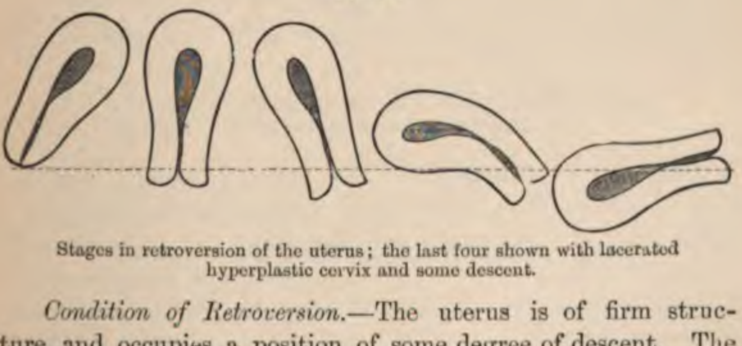
RETROVERSION AND RETROFLEXION.

Definition of the Posterior Positions of the Uterus.—The posterior positions of the uterus are backward placements evolutionary from some condition of which they are symptomatic.

Retroposition is the result of the normal removal backwards of the uterus by the more or less distended bladder.

Retroversion.—Retroversion is a symptomatic and pathological state in which the fundus of the uterus is turned towards the rectum, on which it rests, and the cervix towards the front; the canal is not obstructed by angling.

FIG. 48.



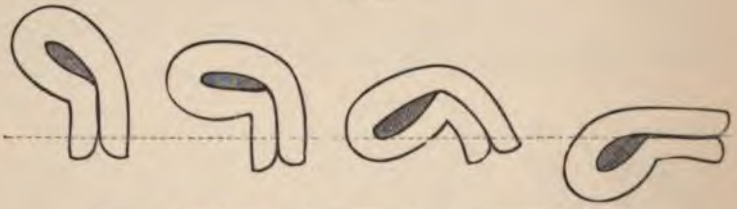
Stages in retroversion of the uterus; the last four shown with lacerated hyperplastic cervix and some descent.

Condition of Retroversion.—The uterus is of firm structure, and occupies a position of some degree of descent. The fundus usually presents backwards and upwards, and presses at an angle on the rectum, the cervix looking downwards and forwards; but the uterus may continue the posterior rotation on a transverse axis at the cervico-corporeal junction, and appear in any position thus attained, till the cervix looks upwards and forwards, and the fundus downwards and backwards.

Retroversion, being a stage in the progress from the normal position to that of retroflexion, previously existed in all cases of the latter, although it is not necessary that it should evolve into that position; and it is described under that heading. But in addition it is necessary to mention its occasional causation by hypertrophy of the cervix, perhaps virginal, when, by the excessive weight and bearing down, the ligaments and pelvic musculo-elastic connective tissue, the vagina and perinæal floor are so stretched that descent occurs, and the uterus occupies in turn the descending axes of the pelvis, until at length it may be prolapsed; so that after it has passed below the axis of the pelvic inlet it is constantly in a state of increasing retroversion.

Definition of Retroflexion.—Retroflexion is an evolved position from retroversion, in which the body of the uterus is bent backwards on the cervix so that an angle is formed, which in some cases obstructs the lumen of the canal.

FIG. 49.



Stages in retroflexion of the uterus, shown with lacerated hyperplastic cervix and some descent.

Condition of Retroflexion.—The uterus is usually well developed in size. The cervix looks downwards and backwards, downwards, or downwards and forwards; the body upwards and backwards, backwards, or backwards and downwards; so that the canal is occasionally obstructed by the angle formed at the line of junction of the lower and upper portions. The body may be freely movable, wedged into the cavity of the sacrum, or adherent from subsequent evolutionary peritonitis binding down the posteriorly misplaced tubes or ovaries; or, forming posterior bands, attaching the body of the uterus to the anterior surface of the rectum, the sides of the pelvis, the intestines, tubes, or ovaries.

It is—

1. Virginal,
2. Parous, or
3. Induced by the influence of a tumour.

1. In the virginal class the retroflexion is seldom marked, and often little, if at all, exceeds retroversion. The opening may be—

(*a*) of normal size,

much more frequently it is congenitally abnormal, being

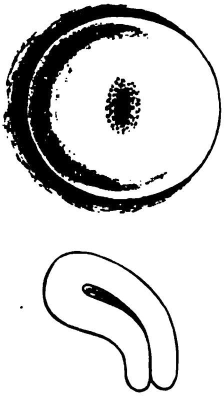
(*b*) small, or
(*c*) large with cervical eversion.

In either of the two latter cases, and usually also in the first, endometritis is present and the canal is seen to be granular, and perhaps the edges and face of the os are abraded. The os is congested; the uterus is usually only in the first degree of misplacement, the body not reaching the horizontal line, and the cervix looking downwards, or downwards and forwards; the tubes are tender, and may be enlarged and latero-posterior; and on replacement of the body may be felt in Douglas' pouch. In these conditions the ovaries participate, and more or less adhesions may have occurred as between the tubes, the ovaries, the uterus, the ligaments, and the intestines, so that replacement of the uterus is painful, and the retroflexion is apt to recur on removal of the sound in the side position.

Causes and Mode of Causation.—(*a*) In the virginal class with an opening of normal size in strong uterine and sexual development retroflexion is produced by undue abdominal pressure, accentuated by habitual distension of the bladder and by retained rectal fæces. Tight lacing has depressed the intestines and the uterus; and the firm busk over the lower abdomen has pushed them and the uterine body backwards, which the full bladder of civilisation has assisted; retained fæces have pressed the cervix forwards, and retroversion is effected; fæces descending on the fundus have subsequently borne it downwards and backwards; and the centre of gravity during the day falling posterior to the cervix, and the dorsal position assumed at night, accentuate the displacement.

Or, under the previous conditions, absence of marriage and continuous unsatisfied desire have induced endometritis and tubal congestion; the tube has dilated beyond the uterine junction by accumulation of secretion from difficulty of escape; a congested œdematous state has occurred, and thus effusion from the fimbriæ has ensued; some peritonitis with thickening of the ovarian tunic results, Graafian follicles are unable to rupture, and follicular cysts result, producing excessive weight of the ovary; the ovary drags back on the fundus, which becomes retroflexed to the extent that the ovarian descent occasions.

Fig. 50.

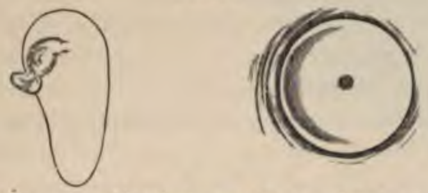


Virginal normal opening with slightly granular edges, endometritis, and retroversion. The development is strong.

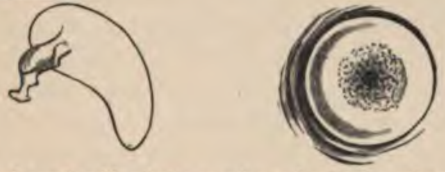
(*b*) But the more common cause is the dragging backwards of the fundus by enlarged tubes or ovaries in consequence of an abnormal development of the opening.

When the opening is small there is some obstruction of the secretions, so that endometritis is induced; the tubes are similarly obstructed, and become heavy from retained fluid and congestion; their increased weight causes them to decline backwards and downwards; and, dragging on the fundus, they pull it with them; or the evolution is as in the preceding causation. Good development of the organ, except as to the small obstructing size of the os, renders congestion the more easy.

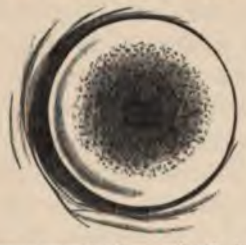
FIG. 51.



Virginal conical cervix with minute opening in otherwise well-developed uterus, which is perpendicular. The appendages are enlarged and are latero-posterior.

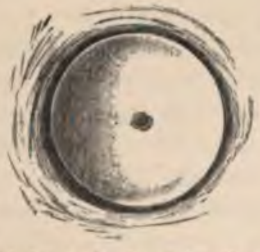


Virginal conical cervix with minute opening and rubbed-raspberry granular hyperplastic face in an otherwise well-developed uterus, which is retroverted. The appendages are enlarged, and are latero-posterior and low.



Virginal rubbed-raspberry granular hyperplastic face compressing the lips of a rather small opening, in an otherwise well-developed uterus.

FIG. 51A.



Conical cervix with pinhole os and strong junction and body, retroverted. Æt. 42. Married 18 years. Never pregnant, but always menorrhagia.

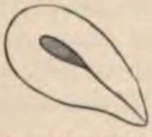


Diagram of retroversion with conical cervix and pinhole os.

(*c*) Where the opening is of excessive size, the same endometritis and tubal and ovarian distension take place by the continued congenital exposure or eversion of cervical structure, its vaginal friction, and the resulting granulation, inflammation, hyperplasia, consequent obstruction, and corporeal endometritis.

FIG. 52.

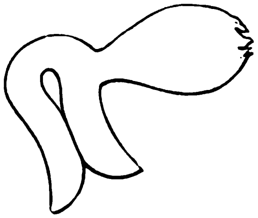


Diagram of virginal enormously everted granular cervix, simulating lacerated cervix with large pyo-salpinx. (The tube is purposely out of drawing.)

But in these causations the body does not fall below the horizontal and seldom so far downwards, for the posterior wall of the junction is naturally strong, and there is no normal tendency to curvature backwards, but, on the contrary, forwards; and the tubes or ovaries do not descend so low as to obtain a direct pull downwards, but have a support to some extent laterally. The position is thus usually that of retroversion or of slight retroflexion, without producing such an angle of flexion as obstructs the lumen of the canal. Nor does the cervix descend, or but slightly, for the development is one of uterine strength, and there has been no relaxation of the supports, vaginal column, or of the pelvic floor. Thus the fundus goes as far backwards as it is dragged by the heavy tubes or ovaries, and there rests. The only exception to this is where wasting, in consequence of the continued illness, takes place in a large pelvis, with perhaps hypertrophic elongation of the cervix, when undue space may permit farther descent, which, however, has little to do with the ordinary line of virginal inflammatory disease, and is liable to be counteracted by peritonitic adhesions of the tubes and ovaries.

Progressive Evolutionary Disease.—The condition being one of virginal, vigorous, sexual development, there is throughout considerable congestion. The endometritis therefore progresses, and the proximal ends of the tubes tend the more to be blocked. The cervix remains inflamed, and in consequence of the displacement rubs against the vaginal rugæ, particularly the posterior lip; and if the opening be small, the cervical face is thus the more supervascular and often granular like a rubbed raspberry, and hyperplastic; and the internal membrane fills the os, thus farther obstructing drainage; if large, the everted cervical villi lose their epithelial coat, and are more inflamed; the connective tissue becomes more hyperplastic, the cervical tissue more everted; the glands more irritated, their secretion largely increased in quantity, and the mouths of some are blocked by the hyperplastic tissue, whereby their secretion accumulates in their ducts, forming cysts, and inflammation is increased. Thereby obstruction of drainage and general uterine congestion are accentuated, and dysmenorrhœa and menorrhagia ensue.

The retroflexion necessarily creates an increased angularity of the tubes, which, in their already congested and thickened state, still farther obstruct their canals, and the secretions are the more retained; effusion from the distal extremity results, some peritonitis is induced, and they become adherent and are subject to evolutionary pathological progress. The uterus is thus held back by the adherent tubes and ovaries, and the peritonitic bands may also attach it to the adherent tubes or ovaries; or, more rarely, its posterior wall or fundus to the anterior wall of the rectum; but this is unusual.

The early stage of free virginal retroflexion is seldom seen, for usually attention is first drawn to the part by the local peritonitis of tubal effusion, which results in some adhesion. The degree of adhesion is proportionate to the stage, site, and extent of the tubal effusion, and consequent peritonitic irritation and fibrinous exudation.

The ovarian tunic is affected by the peritonitis, and is thickened; the future rupture of the Graafian follicles is rendered difficult, and follicular cysts result, with their diseased tendencies.

The backward displacement of the body of the congested and tender uterus, tubes, and ovaries induces an undue pressure on the rectum, producing a mechanical and nervous difficulty of descent of the fæces, and therefore tends to constipation, with absorption of the moisture of the fæces and blood infection, accumulation of gas in and distension of the intestines, and thus to affections of digestion and debility.

When the constipated fæces descend, pressing on the retroflexed body, they tend to still farther depress it, and thus to increase the flexion and its effects.

The influence on the system is apt to be marked. The condition being vigorous, the uterus well developed, and the sexual feeling normal, the pain is constant or recurrent, and greatly increased at the menstrual epochs; the mucous discharge and consequent debility are considerable, and the catamenial discharge is undue and generally more frequent; the drain on the system is exaggerated, and the nervous system suffers. While it may be found that the most advanced state exists, in which the uterus is retroflexed, the cervical tissue everted, granular, and hyperplastic, the tubes and ovaries adherent latero-posteriorly, and a tubal tumour at one or both sides, a peritonitic wedge posteriorly and the uterus fixed, without marked mental affection or even complaint; on the other hand, even in the lesser degrees, the mind may have been so influenced that derangement with strong sexual tendencies may occur, which may have infinitely sad results.

After marriage in an advanced stage, coitus increases the inflammatory tendency mechanically and mentally, and tends to hasten the evolving progress.

In the milder forms of the causation, and particularly when effective treatment has cured the cause but the retroflexion continues, pregnancy may occur, and be subject to development in that position, which will be described in detail under parous progressive evolutionary disease with retroflexion. Usually, however, the retroflexion is not so determined but that the enlargement of the anterior wall permits the rising of the uterus out of the pelvis, and the pregnancy proceeds normally. In the case of evolutionary disease having bound down the appendages or uterus, so that the latter retains the posterior position, pregnancy very rarely occurs, because of the difficulty of the spermatozoa travelling through the tubes, and of their reaching the ovum to fecundate it. Should it by chance do so, abortion ensues, but with difficulty from the muscular fibres of the uterus acting at a disadvantage; portions of the ovum are thus liable to be retained, and to be adherent to the lining membrane from the presence of endometritis, and hence continued or repeated hæmorrhages and puerperal septicæmia.

In delivery, whether by miscarriage from local irritation or at term, the granular hyperplastic state of the cervix, whether the opening be large or small, renders it unsuited for dilatation, so that it probably lacerates, septic inflammation or at least subinvolution follows, retroflexion recurs, and the subsequent state is that described under parous retroflexion.

Symptoms.—The symptoms are referable to the condition of retroflexion, to its causation, and to its evolutionary affections.

The condition of retroflexion induces a sense of depression, and therefore of bearing down; the posterior pressure produces constipation, and perhaps pain in the back on straining in defecation; the intestines may be distended by gas, or are, irregularly dull and resonant by gaseous and fæcal contents, hindered in their descent. The catamenial secretions escape with difficulty if the angling of the canal be acute, and thence muscular spasm and contractile dysmenorrhœa.

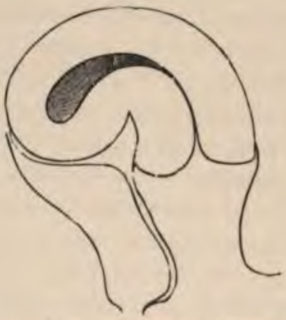
The cause of congestion produces pressure on the uterine nerves, and sacro-lumbar pains; the catamenial secretions are excessive and painful from distension of capillaries; there are leucorrhœal discharges, debility, and nape and head neuralgia.

The tubal disease effects peritonitic symptoms and evolving tubal obstruction; and there may be pain in the iliac regions from ovarian distension and difficulty of rupture of Graafian follicles.

In the more moderate and early stage of the disease, pregnancy may cause nerve irritation and excessive vomiting in progressive enlargement in the retroflexed position, and thus miscarriage; and in its incompleteness, hæmorrhage and septicæmia; but, the stage being early, the uterus frequently rises to the normal position, and these symptoms are absent.

Diagnosis.—The diagnosis is determined by the canal of the uterus lying with its concavity backwards. This may be ascertained by the passage of the sound, which, however, should be rarely essential as an aid to diagnosis, for the line of the uterus should rather be accurately ascertained by the finger. Yet there are cases in which a posterior ovary or tube occupies a position exactly corresponding to that of the retroflexed fundus, when the sound determines the relations of these organs. As, in giving an opinion, it is necessary to know whether the evolution to tubal disease, fimbrial effusion, and peritonitis has produced such adhesions as more or less bind down the appendages and uterus, it is desirable to ascertain, by means of replacement by the sound, whether this be so or not. Thus in Sims' position the sound may be gently rotated, so that the uterus is placed in the normal position: should it remain so on withdrawal of the sound, it is inferred that adhesions are absent or unimportant; should it in this position recur to the backward state, peritonitic bands so retract it either through utero-rectal, tubo-, or -ovario-pelvic adhesions.

FIG. 53.



Retroflexion with lacerated everted granular hyperplastic cervix, and subinvolution of the uterus and vagina, and laceration of the perinæum in the second degree.

Prognosis.—The prognosis is highly unsatisfactory when the disease is unaided by effective treatment; for in unmarried women the causationary and evolutionary affections progress; and, in the absence of pregnancy, marriage quickens their advance. If in an early stage of the causation pregnancy occur, laceration of the cervix is probable; subinvolution will follow, and a progress to the exaggerated stage of parous retroflexion, with its evolutionary results.

Parous Retroflexion: The Condition.—2. In the parous state the vagina is generally patulous and subinvoluted; but not necessarily so, especially when the retroflexion is recurrent from virginal misplacement; the perinæum may have been more or less lacerated; the opening of the uterus is usually large, and the vaginal cervix lacerated; its faces are more or less raw and inflamed, or everted, granular, and hyperplastic, according to the interval of time since the original injury; the canal is endometritic; the uterus subinvoluted and heavy, and its canal lengthened; the ligaments and pelvic connective tissue are lax and subinvoluted.

Causes.—Except that after parturition there is a strong tendency to a recurrence of the virginal retroflexed position in consequence of the induced feebleness in the angle of flexion in the uterine structure, the cause of parous retroflexion, which is usually subinvolution, is in marked contrast to that of the virginal state, which is effected by the pulling back by increased weight of the ovaries or tubes. This subinvolution is induced by any condition which hinders or prevents a normal return to the original size and weight of the uterus and surrounding structures; fatty degeneration with absorption has not been carried to the extent of reducing the organ to its normal size. At the same time the muscular, fibrous, and connective tissues of the pelvis above and at the level of the uterus, whereby it is suspended in the pelvic cavity, as well as of the vagina with its longitudinal and circular muscular fibres, and of the pelvic floor which support it from below, have not recovered their tone; and the perinæum, in addition, has frequently been to some extent lacerated. This subinvolution is due to one or other of the following causes, some of which are apt to be coincident.

These causes are comprised within—

(*a*) Direct pressure on the uterus;

(*b*) Injury to the uterus or its supports, or to both; and

(*c*) Blood dyscrasiæ.

Of excessive pressure, the excessive tightness of the binder after parturition is almost universal; but the most common cause is laceration of the cervix, with which the influence of the tight binder is apt to be combined; and next in frequency is laceration of the perinæum; also are included any conditions which induce septic poisoning, as retained decomposing pieces of placenta, decidua, or clots, and the exanthemata; and, indeed, any of the causes of septicæmia, autogenetic or heterogenetic.

Moreover, all conditions of deficiency of blood strength, as excessive child-bearing, superlactation, deficiency of nutrition, and such organic diseases as produce this effect, as phthisis, may act as causes. Yet in these latter states the local equilibrium is apt, though not necessarily, to be sufficiently maintained in the absence of some condition of the former more local causes.

Mode of Causation.—(*a*) Direct pressure on the parous uterus is habitually applied after parturition by a tight binder with the intention of preserving the figure. The uterus being large after the birth of the child, the binder presses directly upon it, depresses it in the cavity of the pelvis, and everts the cervical membrane through the patulous os. Involution proceeds feebly, and the uterus is in a state of fatty degeneration and is flabby. The woman gets up about the tenth day, and the uterus maintains the position into which it has been forced, which is in an axis of the pelvis lower than is normal. The opening of the cervix has not normally contracted, for the cervical membrane was pressed down through it. This everted mucous membrane, on assuming the erect position, and especially on walking, is rubbed against the vagina and becomes granular, and thereby a low form of congestion ensues. The system has been weakened by child-birth and the needful repose in bed, and the bowels are constipated, the more so in that the large thus depressed uterus occupies the pelvis. The retained rectal stools press the heavy cervix forwards, and the descending fæces weigh on the fundus; the fatty junction yields, and the body falls more backwards, whereby the venous return is impeded. The body is thus œdematous, involution is yet more hindered, and more or less complete flexion ensues. This is presently accentuated by the woman's loss of fat and weight, which results from the increasing debility from leucorrhœa, bearing-down, neuralgic cerebro-spinal pain, constipation, loss of appetite and lactation; and the retroflexion is established.

(*b*) In direct injury to the uterus, which is by far most common from laceration of the cervix, the injury has usually resulted from the virginal conditions of abnormal development in the way of small or excessive size of the opening, with resulting inflammatory thickening and hyperplasia, rendering the structures incapable of dilating in labour sufficiently for the passage of the child, so that the tissues split rather than stretch. This split is more extensive in proportion to the greater existent degree of connective tissue hyperplasia, which is unsuitable for dilatation. Where the virginal state has been that of retroflexion, the condition at once recurs with parous exacerbations. The surfaces of the split cervix are separated by the retraction of the torn circular muscular fibres, and the resulting removal of resistance by them to the upward action of the longitudinal fibres, and by the layer of the lochia, and primary union does not occur. If a septic influence prevail, and the temperature be raised, an inflammatory thickening at once takes place on these surfaces, and whatever future cicatrisation occurs is by a limited process of healing contraction at the angles, and perhaps epithelial growth at the edges, but the surfaces remain everted and granular, and become hyperplastic, from which there is a chronic discharge, which is a constant drain on the constitution, and there is chronic endometritis. Also the involutionary processes of adjacent structures are impeded, and complete return to the normal does not take place. Thus the uterus has a lacerated cervix with everted granular raw-beef faces; it is unduly large and heavy, and its suspensory pelvic tissues and its supporting structures are weak and deficient in power. When in bed in the dorsal position the uterus consequently falls back; but in the erect position descends, and occupies an axis of the pelvis on a plane below the normal, so that it passes from that of the brim to that of the pelvis, tending to that of the vagina. The rapidity and degree of the descent are proportionate to the degree of excessive weight and impairment of the suspending and supporting structures, aided by abdominal pressure of the binder, as counterbalanced by the resistance from below, as well as by what inflammatory cohesive thickening of the connective or peritoneal tissues may have occurred when in the recumbent posture. But the attachment of the cervix to the bladder, and of this to the pubes, tends to prevent excessive primary anterior descent of the cervix, and the heavy congestive body thus balances for a time in a more or less perpendicular position, the fundus touching the rectum. As the uterus decreases in size after parturition, the superior intestines, flabby and usually flatulent and constipated, press it backward, and descending fæces act on its fundus and farther depress it into a position of retroversion. The body now compresses the rectum, so that flatulence and fæces the more accumulate above it, and on their descent yet more depress the fundus uteri. On their passing the fundus, their usual lower retention in the lower rectum pushes the cervix farther forwards; and in the subinvoluted condition, the uterus readily angles itself at the cervico-corporeal junction, and retroflexion is complete. If the uterus be long, flabby, and weak, there may be impaction of the body against the cervix in the sacral cavity; if short and sturdy, the position is rather that of retroversion or a slight flexion with great posterior descent of the body, and tilting forwards of the cervix.

The progress may halt at an intermediate stage for many reasons. Among these are inflammatory thickenings of the connective tissue of the broad ligaments, induced by laceration of the cervix deeply into it; peritonitic adhesions about the tubes and ovaries; strong healthy states of the pelvic fascia in strong women which resist the influence of descent, but are unable to prevent the uterus itself rotating on a transverse axis at the cervico-corporeal junction by the abdominal pressure, and attaining to a high posterior flexion, particularly if there were previous virginal retroflexion; and limited influences of injury to the supports, as laceration through the perinæum and posterior vagina, and through the vaginal cervix deeply into the vaginal tissue, but with much contraction of the upper vaginal walls.

Retroflexion induced by Laceration of the Perinæum or Vaginal Muscular Fibres.—The next cause of parous retroflexion is laceration of the perinæal body, or of the circular muscular fibres of the vagina, whether completely through the mucous membrane or subcutaneously. Yet it by no means necessarily follows that retroflexion should ensue from these injuries unless general subinvolution of the uterus and its supports, and particularly of the broad ligaments and pelvic connective tissue, and of the musculo-elastic structures of the vagina, usually due to septic action, results; laceration of the cervix is usually also present, for the conditions which prevent due dilatation of the perinæum are generally accentuated as to the cervix; and should delay in delivery have occurred from deficient dilatability of the cervix, the subsequent, perhaps instrumetal, delivery over the perinæum is liable to be hurried, especially in the absence of chloroform, and the perinæum to be torn.

Condition.—The vaginal orifice is large, the transverse fibres of the pubo-coccygeus muscle being lacerated, even if the external skin be not torn, and it has lost the power of contraction. When the woman lies on her side the orifice gapes, and the canal expands by the entrance of air. The anterior or posterior vaginal walls, or both, project to a greater or less extent, for the vaginal longitudinal muscular fibres and the pelvic connective tissue are stretched and subinvoluted. The higher vaginal concentric muscular fibres have been overdistended or ruptured, are subinvoluted, and without power of contraction, and the whole canal is large, lax, and flabby.

The uterus is low, heavy, and subinvoluted, the cervix generally lacerated, and the faces everted and granular, though perhaps partially covered with vaginal epithelium by healing from the edges; rarely the cervix and os are normal; the uterus is retroflexed.

Mode of Causation.—The causes are the stretching, laceration, and subinvolution of the stretched sub-vaginal and vaginal musculo-elastic tissues; the support below the uterus is therefore deficient, and the prolapsing vagina tends to drag down the uterus, with which its walls are continuous. The customary coincident subinvolution of the uterus increases the weight, and the subinvoluted feeble pelvic structures and floor offer a deficient resistance to its descent.

In consequence of the laceration of the perinæum at the time of parturition, there is a raw surface which, it may be, is inflamed with a raised temperature; whether there be fever or not, the normal process of involution is hindered, and the rapid restoration after dilatation of the perinæum and muscular and connective tissues of the vagina is impeded, and subsequently they are deficient in power of resistance and support. On rising from bed there is some descent of the vagina through its now unduly large opening; and the uterus, of which the muscular and connective tissue fibres are continuous with those of the vagina, from its subinvolution and deficient support, follows this tendency. On moving about in the upright position these influences are increased, and the descending vagina by gravity drags still more on the uterus, also subject to gravity, and depresses it; and thus, from these combined influences, the uterus occupies a lower axis of the pelvis. Assuming a moderate involution of the pelvic fascia and broad ligaments at and above the level of the upper vagina, the uterus does not continue to descend, but remains suspended, but in an axis lower than the normal. The influences of abdominal and intestinal pressure previously described then come into operation, and retroflexion ensues.

The normal state of the pelvic floor is that of a firm bed with three slits, the walls of each of which are in close approximation by concentric strong muscular fibres; and the external openings are firmly contracted by circular muscles, unless in the case of the urethra, of which the size is unimportant. If there have been laceration through the perinæum, and of vaginal concentric muscular fibres, and lateral retraction of them and subinvolution of connective tissue, the vagina is pyramidal with the apex above. If the laceration be of muscular fibres to the level of, but not through, the layer of skin of the pelvic floor, the pyramidal aspect is a little less apparent; but the effects are the same, for the muscular fibres are lacerated.

Causation by Subinvolution from Blood Dyscrasiæ.—(*c*) Blood dyscrasiæ induce retroflexion through septic influence on the puerperal endometrium, or any lacerated structure producing subinvolution, and may be in the form of the exanthemata; but particularly through placental adhesion, whereby necrosing structures remain attached to the internal wall, or retention of blood-clots or pieces of placenta which decompose within the cavity. By absorption septicæmia is induced, and the temperature rises; at high temperatures the progress of processes of repair is continued with much difficulty; and, while fatty degeneration may proceed, absorption and the reformation of new muscular fibres are hindered. The same applies to all structures to be similarly repaired, and which must undergo contraction to regain their normal condition. Thus, the woman recovering, the uterus remains unduly heavy, and the supporting and upholding structures are feeble; there is general subinvolution; the uterus descends, and is exposed to the influences which effect retroflexion, as before described.

Progressive Evolutionary Disease.—Should these conditions continue to evolve pathologically, the descent of the uterus is increased, and it may finally prolapse, the bladder accompanying it. The tubes and ovaries are dragged down with it and fall posteriorly; so that, if the uterus be replaced, the appendages, if non-adherent, are found to immediately occupy Douglas' pouch.

The subinvolutionary endometritis, which it has been shown habitually precedes the retroflexion, has already more or less extended to the tubes, even if septicæmia has not inflamed and thickened their lining membrane, and their drainage is impeded; the descent and posterior displacement of the uterus drag upon them and angle them at the utero-tubal junction, so that their lumen is yet farther obstructed; should they have been affected by virginal thickening in the progressive evolutionary disease of the original endometritis which was the cause of an antecedent virginal retroflexion, its recurrence is the more readily effected, and the canal is obstructed; hence effusion of tubal catarrhal secretion into the peritoneum, and peritonitis, adhesions, tubal closure, and their evolutionary diseases, ovarian thickening, and follicular and perhaps papillomatous cystic disease.

The descent of the uterus is to some extent hindered by the vaginal attachment; so that, if there be some laceration of the cervix, and particularly if it be deep and beyond the vaginal junction, the uterus tending to descend, and the vaginal junction restraining it, the lacerated faces are pulled apart, the cervical endometrium is everted to a lesser or greater extent, and the exposed raw and subsequently granular surface is proportionate. Congestion and connective tissue hyperplasia necessarily ensue, with still farther obstructed circulation and increased weight of the retroflexed uterus.

But, though these conditions of retroflexion may maintain, it is common that pregnancy occurs. This is most frequent when the uterus is free; but there may have been some peritonitis with limited adhesions which bind the uterus in the backward position, though perhaps with the gradual tendency towards health; the tubes may presently be patulous, and the fimbriæ be able to apply themselves to some of the maturing Graafian follicles of the ovary. Should the impregnated ovum not reach the uterus, extra-uterine-fœtation with its evolutions results. If the ovum reach the non-adherent uterus, in development the body is enlarged; and if it lie upwards and backwards the growth of the anterior wall usually induces a gradual replacement, so that the pregnancy proceeds normally; and if the adhesions be slight and the position as described, this may still be the case, the slight adhesions yielding and stretching, but with pain, and perhaps threatening of abortion. But when the fundus lies posterior to the cervix, in its development the body pushes the cervix forwards and upwards, and fills the sacral cavity and pelvis, and the rectum is compressed. Presently the pressure becomes so great that the bladder is raised and the lumen of the upper urethra closed, and there is retention of urine. Absolute retention of urine is to some extent limited by a continuous flow from the urethra, but this is under extreme bladder tension, and there is no relief to the quantity of urine contained in the bladder which is not reduced, and perhaps increases by gradual separation of the bladder walls. Such pressure on the mucous membrane and muscular walls induces compression of the vessels, so that necrosis occurs, and the whole lining mucous membrane may be exfoliated and passed as a complete cast, or come away in pieces. The bladder now has no mucous membrane, and the muscular coat is exposed to the action of the decomposing urine, becomes inflamed and secretes pus, of which the continuous drain on the system presently causes death. The farther influences are evident in the distension of the ureters, the pelves, and calices of the kidneys, which may lead by continued pressure to suppression of formation of urine and to uræmic convulsions; or, on late relief, to their suppuration.

If the retroflexed uterus be low and adherent, abortion is more likely to occur by inability of the ovum to enlarge except under excessive pressure; thus the membranes rupture; but it is difficult for the ovum to escape, for the body of the uterus may be now very low in the pelvis, and the cervix look upwards and be almost out of reach; and repeated hæmorrhages, or septicæmia from the retained decomposing ovum, are probable.

Symptoms.—The symptoms result from subinvolution of the supports and the descent of the uterus, from the pressure of its malposition in its condition of excessive weight, from debility induced by the drain of the endometritic discharge, and from the evolutionary affections.

The sensation of the descent is commonly expressed by the woman as a falling of the womb or bearing down, and there is a sense of dragging about the pubes, especially on standing or walking, and frequent micturition from the dragging on the bladder; and this is present in a less or greater degree in proportion to the uterine weight, and to the degree that the uterus remains high or descends to a low level.

The pressure of its excessive weight affects the action of the intestines so that the fæces do not readily descend, and constipation ensues; in some cases alternating with diarrhœa from the superior bowel at times resembling the condition of partial obstruction. Thus it is not unusual to find the abdomen prominent, and perhaps the small intestines in coils, and irregularly flatulent and dull from the undue presence of gas and fæces. The woman is weak from the constant leucorrhœa, which, if unnoticed by her, may yet be found in the vagina; and from the constant wear on her system of the bearing-down pain, and the depression of spirits at her incapacity, these influences produce cerebro-spinal neuralgias, and affect the appetite and sight. The evolutionary symptoms are those resulting from the affections of the tubes, as peritonitis, peritonitic adhesions, ovarian follicular tension and enlargement.

Diagnosis.—The diagnosis is determined by the cervix being felt to be perpendicular, or to present downwards and forwards, while the fundus lies upwards and backwards, backwards, or backwards and downwards. There is sometimes an uncertainty as to whether the posterior body is the fundus uteri or an ovary; but this is determined by the introduction of the sound if there be no suggestion of pregnancy in a retroflexed uterus, when the general symptoms of pregnancy should be present, and the enlarged body be replaceable, if non-adherent, by the finger, in the knee-elbow, or Sims' position.

Prognosis.—Unless surgical means be adopted to repair the supports, heal raw surfaces, and lighten the uterus, the expectation is of continuance of the symptoms and of progressive evolution. After the menopause, the uterus may become atrophic, and thus the desired lightening may occur, when the mere symptomatic retroflexion may be immaterial. But the causes are liable to remain and develop into cancer.

3. Of retroflexion induced by the influence of a tumour the conditions are of two kinds. The first is where the tumour, as a small myoma, is situated in the posterior wall of the body of the uterus, and by its weight in the dorsal position, or in the erect by the centre of gravity of the enlarged organ falling posterior to the base of the junction, the body retroverts or retroflexes, the degree being determined by the size of the tumour which is behind it; thus, with a smaller tumour, retroflexion is more frequent than with a larger.

It has already been mentioned that enlarged tubes and ovaries drag back the fundus, but not to a marked stage; for, if they be free, they fall into Douglas' pouch and so occupy it; and if they be adherent, they are already attached laterally.

Many tumours push the body of the uterus backwards, and retrovert or retroflex it. Of them the distended bladder without complication produces retroposition, rather than retroversion or retroflexion; but, on their production, accentuates them. In a myoma of the anterior wall which does not involve the canal, the sound may pass with its concavity backwards; and ovarian and other cystic tumours may lie anterior and superior to the uterus, and push its body backwards into Douglas' pouch.

In all these and other similar causations, the mode of causation and the other points of consideration are of importance with reference to the tumour rather than of the misplacement.

CHAPTER XII.

LATEROVERSION AND LATEROFLEXION.

Definition.—Lateroversion is the turning or falling over of the body of the uterus to one side, the line of the canal being moderately straight.

Lateroflexion is the falling of the body of the uterus to one side; but the cervix is perpendicular, or may incline to the same side as the body, and there is an angle of flexion in the canal. These conditions are symptomatic and evolutionary.

Condition.—In this version the line of the organ may be strictly mid-lateral—that is, lateroposed—but far more frequently it is oblique, so that the line of the body points to one side, and that of the cervix to the other; in either case the lumen of the uterus is free, and there is no angling in the canal. In the flexion the same lines obtain, but it is quite rare to find the mid-lateral—i.e. lateroposed—position of the uterus; it is almost invariably oblique, and an angle of some obstruction exists in the canal. The angle of flexion is rarely of the lateral wall of the uterus, on which the uterus bends on its side, but there is some rotation of the uterus on its longitudinal axis, so that the anterior and posterior surfaces face obliquely, the rotation being rarely more than a fourth of the side of the pelvis. In inflammatory causations there is lateral adhesion, generally of a tube which may be latero-anterior or latero-posterior, or a tumour may be present.

Causes.—There are four chief causes:

1. Congenital deficiency of development;
2. Inflammatory retraction;
3. Subinvolution of the uterus;
4. Lateral displacement by pressure of a tumour.

Mode of Causation.—1. In the congenital causation there is a deficient development of one half of the uterus; one of the two Müllerian ducts growing deficiently, the uterus is well-formed on the one side, and to some extent embryonic on the other. On the side on which the development fails, there is deficiency of uterine structure, and the well-formed half assumes the position of the uterus, occupying the central line. Thus the canal has a position which is oblique with regard to the central axis of the pelvis. The cervix following the line of the body, a condition of lateroversion occurs, and the organ is on one side spantrophic.

2. The second cause of the lateral position is inflammatory retraction, generally virginal—i.e. non-parous, operative, or gonorrhœal. The tube, being inflamed and thickened or distended, at first pushes the uterus to the opposite side, effecting lateroversion or latero-position; a small effusion having occurred from the fimbrial extremity of this tube, there has been an exudation of fibrin involving the side of the pelvis and a considerable portion of the tube as far as, or nearly to, the uterus; absorption has followed, and subsequent contraction, and the uterus has thus been drawn over to the side of the affected tube, and is held there by fibrinous bands; the cervix generally yields to the pressure exerted upon it by the strength of the lateral contraction at the cornu, and the position is thus one of latero-position, or more generally lateroversion, the canal not being angled.

But if previous to such fimbrial effusion the position of the body have been misplaced, as ante- or retro-verted or flexed, as is usual from its evolutionary causation, the misplacement of the body generally takes a latero-anterior or latero-posterior direction respectively, by a gradual contraction or pulling on the fundus by the tube, and is usually oblique, the cervix following the line of the body.

3. When a uterus from some cause remains subinvoluted, it is of excessive length, flabby, and heavy. The muscular fibres of the broad ligaments are also lax, and do not afford the needful support; thus the body is liable to incline towards the side in relation to gravity, or to the pressure exerted by the intestines, and the quantity and character of their contents. Since the

upper rectum occupies the left posterior position, such a uterus lies most frequently over to the right, and there need be no adhesions.

4. Lateral displacement by pressure of a tumour produces a position proportionate to the site of the tumour in relation to the uterus, and to the situations of its special developments. Should the tumour, as a tubal collection, a peritonitic exudation, or an ovarian, myomatous, or other growth increase specially laterally and upwards, it may press the body to the opposite side; and the cervix, maintaining its uterine relation, may lie on the opposite side and produce a lateroversion; or, if feebly developed at the cervico-corporeal junction, there may be some rotation of the uterus and lateroflexion result. If the tumour fill the pelvis, the body may be crowded over to the opposite side, as well as the cervix, and a latero-position ensue; or, if one or the other latero-anterior or latero-posterior pressure be in excess, a rotation in the axis of the attained position may result in a lateroflexion; or the uterus may be raised to a very high plane of the pelvis, and be reached with much difficulty or not at all by the finger in the vagina, and latero-position, lateroversion, or lateroflexion is assumed, perhaps with some obliquity.

Progressive Evolutionary Disease.—In the case of congenital deficiency of development of one half of the uterus, and of the occurrence of pregnancy from the normal condition of the other half, the growth of the uterus may progress, but with feebleness of structure on the spantrophic side; but the compensating powers of Nature generally permit the growth to advance to term. On the occurrence of labour, in view of the feeble development of the spantrophic side, a great strain upon it occurs and rupture of the uterus may ensue, or the weak side of the cervix may lacerate.

In the adhesion of a tube and retraction of a previous lateral inflammation, the capability of the uterus, pregnant through the medium of the other tube, to rise in its development during pregnancy depends on the site and degree of the adhesions; and if these be sufficiently strong to hold the body of the uterus in its pathological situation, such irritation is produced by the increasing internal growth of the ovum as results in abortion.

The effect of lateroversion from lateral adhesion, as regards the uterus itself, may be unimportant; but sterility results so far as that side is concerned; and the evolutionary effects, by angling of the tube, on the tubes themselves, the peritoneum and ovaries, are as in retroflexion in similar conditions.

When the uterus is attached to the bladder or lateral wall of the pelvis by peritonitic bands, either directly or through the medium of a tube, great irritation and occasionally inflammation of the bladder, with frequent and painful micturition, are liable to ensue from obstruction to distension of the dilating bladder by the adhesions; and if the lateroflexion of the body be to the left, and there be adhesion to the rectum, bands are usually present which may constrict the bowel to a greater or less extent, producing constipation, flatulence of the superior intestines, and perhaps finally obstruction.

The progressive effects of lateral misplacement by the pressure of a tubal, ovarian, myomatous, or other tumour, are, as to the uterus, dependent on angling of the canal of the uterus, and of one or both tubes, and are similar to those in ante- or retroflexion under the same conditions; but by the gradual increase of the tumour they frequently accommodate themselves in an extraordinary degree to the position which they come to occupy; though, if the angling be of the uterus, or of both tubes, sterility results. Should pregnancy occur through the medium of a non-angled tube, abortion frequently ensues by incapacity of the uterus to find room to expand in growth, and this by the opposing influences of pressure within and external to the uterus. In the case of the displacement being caused by a tumour, the uterus is pushed over to the opposite side, and the tube of this side is angled near its junction with the uterus, and its obstruction is produced. While small, this tube lies backwards; on evolutionary distension by angling it rises above the uterus, and it is likely to pass through the evolutionary stages of peritoneal effusion and subsequent pathological results.

Symptoms.—The symptoms are those of the cause, whether inflammatory, subinvolutionary, or from the pressure of a tumour, and are to be referred thereto. But certain special symptoms are liable to occur in particular conditions. Thus, should there be peritonitic latero-anterior tubal adhesions, which, contracting, have drawn the uterus over to that neighbourhood, on the dilatation of the bladder by urine, through the medium of the attempted retroposition of the unduly fixed uterus, an irritation is produced which induces vesical contraction, and symptoms of frequent and painful micturition are induced. Similar adhesions near the rectum in left latero-posterior version or flexion may to a greater or less extent constrict the bowel; or its expansion induces pain, and the downward passage of the fæces is rendered less easy than is normal, constipation and accumulation of gas in the superior intestines result; and obstruction may arise. This condition varies from the bladder state in that, in the latter, there being assumed to be no affection of the ureters, the urine continues to flow into it, and the irritation produces its expulsion; but in the bowel the descent of the fæces causes irritation, and their farther passage is therefore avoided as far as may be.

In the main the other induced symptoms are those of retroflexion.

Diagnosis.—The diagnosis is formed by the cervix being felt to lie firmly to one side while the body is fixed on the other; or the cervix is central, and the body inclines to the side; and these positions are confirmed by the introduction of the sound. On attempting replacement by the sound, when there are adhesions, much pain is caused, and the uterus moves but little if at all, and at once resumes its position on removal of the sound. The lateral subinvoluted unattached uterus is readily movable.

With a tumour the line of the canal defines the position of the uterus, and more clearly indicates the relations of the tumour.

Prognosis.—The prognosis in a uterus of unilateral deficient development is dependent on the condition of the other half; but in case of pregnancy there is anxiety with regard to the relative strength of the body and cervix in labour, with regard to possible rupture of the body and cervix from deficient cervical dilatation, and from deficient power of resistance.

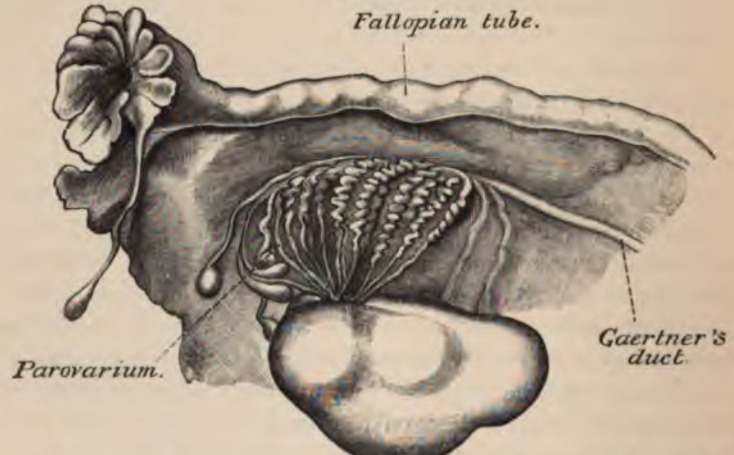
In virginal inflammatory adhesive lateroversion, which is not uncommon, the tube and ovary of that side must be sterile—not necessarily the other. In pregnancy, by the second normal tube, the capability of the uterus to rise is dependent on the strength of the fibrinous bands and their extent.

CHAPTER XIII.

DISEASES OF THE FALLOPIAN TUBES.

THERE are various stages of diseases of the tubes, consequent on distension or disease of the uterus, in which obstruction, temporary or permanent, of one or more parts of the tube is produced with evolutionary results.

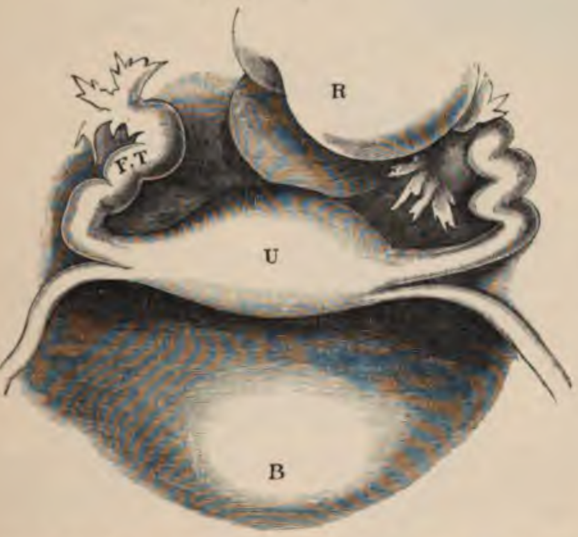
FIG. 54.



Posterior aspect of the normal tube and fimbriæ with hydatid of Morgagni. The normal ovary, parovarium, and duct of Gaertner. (*D. Berry Hart.*)

As seen in the above figure of Berry Hart, the tube is of similar diameter throughout its length until it expands at the distal infundibulum. Any narrowing at one part with more distal expansion or corrugation represents some degree of obstruction and external distension. The lumen of the normal tube, except at its extremities, appears on section as a punctum, which only admits a bristle, surrounded by mucous, muscular, and connective layers; and the face of the section projects and is convex.

FIG. 55.



Position of pelvic organs viewed through the brim (*Schultze*). The tubes are here seen, convoluted and enlarged. B. Bladder. U. Uterus. R. Rectum. F. T. Fallopian tube. (*After D. Berry Hart.*)

The position of the healthy ovaries and tubes varies. When the bladder is empty, the uterus touches the symphisis, and the appendages occupy mid-lateral positions; when full, the uterus is retroposed to the middle of the pelvis, and the appendages have a more central-posterior position, which no doubt varies in different individuals; but in no case in health is an angle formed, nor is there convolution or expansion (fig. 56).

In retroversion the appendages are latero-posterior.

Condition.—The condition, except in early septic disease, is dependent on the site of the obstruction, which may be generally described as of one or other extremity of the tube, or of both, or of the uterus or vagina.

(*a*) With distension of the uterus by fluid, the tube may also be in a state of dilatation with a free uterine lumen, the fimbrial extremity being normal, if the dilatation be slight and do not extend to it, or the end may be adherent. The contents may be catamenial, mucous, muco-purulent, or sanguineo-purulent.

(*b*) The uterus not being distended, there may be narrowing or closure of the proximal end with free fimbriæ, a condition which does not long persist. There may be slight accumulation of fluid, but the distension does not reach to the fimbriæ. Presently there is effusion from the distal end into the peritoneum, and adhesions and closure result.

FIG. 56.

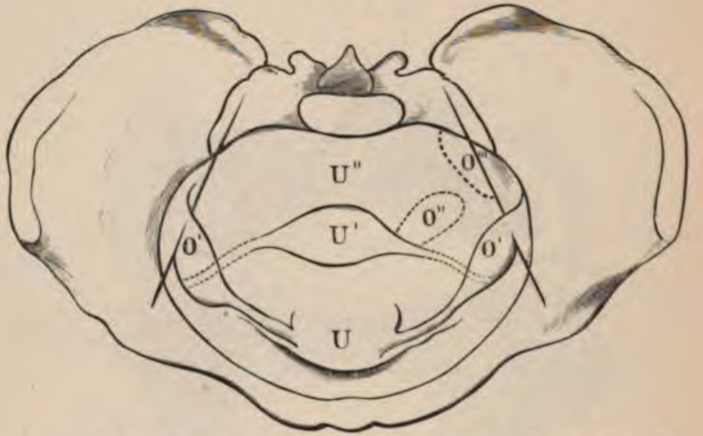
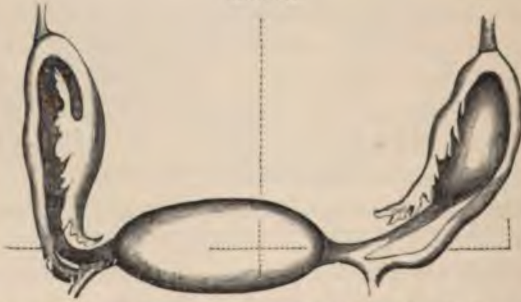


Diagram of position of organs (*Schultze*). U. Uterus, bladder being empty. U′. Uterus, bladder distended. U″. Uterus retroverted. O′. Ovaries when uterus to front and bladder empty. O″. Ovary when bladder distended. O‴. Ovary when uterus retroverted. (*After D. Berry Hart.*)

FIG. 57.

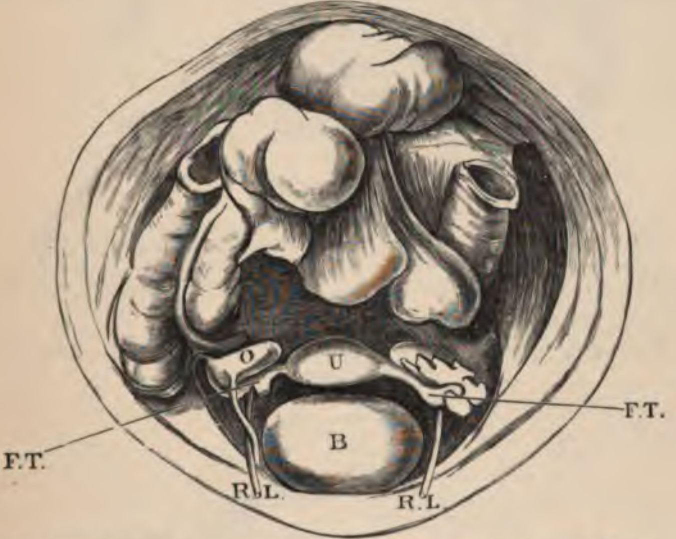


Position of organs as found by His in a suicide. (*After D. Berry Hart.*)

(*c*) Closure of the distal extremity of the tube may exist with a free uterine end; there is no collection of fluid, and the tube is not enlarged.

(*d*) In stenosis or closure of the proximal end, with occlusion of the distal extremity, the body of the tube is distended to a greater or less extent by fluid, and there are distal peritonitic adhesions.

FIG. 58.



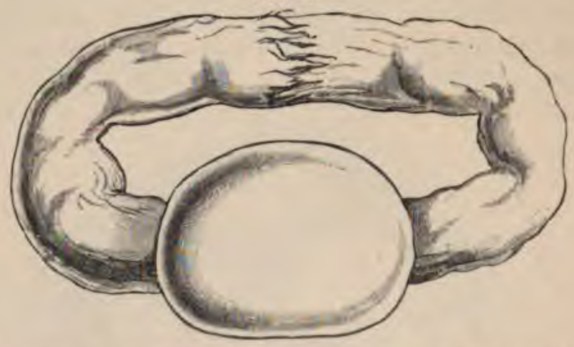
Position of uterus and annex as found by Hasse. B. Bladder. U. Uterus. O. Ovary. F. T. Fallopian tubes. R. L. Round ligaments. (*After D. Berry Hart.*)

Part of the tube beyond the uterus, but generally towards it, may be pale, small, and appear normal, though its canal may be greatly narrowed, and practically closed, and the part external to it much dilated by the retained fluid, the fimbriæ being retracted. Or the tube from the uterus up to its distal extremity may be greatly distended; or in intermittent patency and closure of the uterine end, the tube may be thick, hyperplastic in its structures, inflamed, and curly, and the same state may be found when a sinus exists between the cavity of an abscess of a tube and an internal viscus, which permits escape of the contents.

(*e*) The tube may be occupied by an extra-uterine fœtation, when there is some stenosis, commonly at the uterine end.

The positions of the diseased tubes are various. The effect of enlargement on non-adherent tubes is to create an undue weight, so that the tubes fall backwards, towards, or into Douglas' pouch.

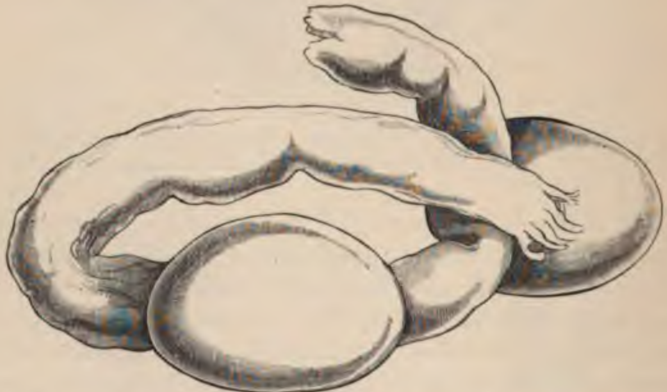
Fig. 59.



Chronically inflamed tubes with cohesion of the fimbriæ posteriorly.

But such tubes rarely remain unattached, and the advent of cohesive peritonitis fixes them in the position which they occupy at the time of the tubal effusion and peritonitic exudation.

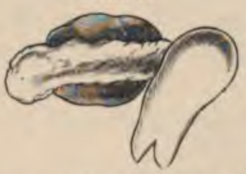
Fig. 60.



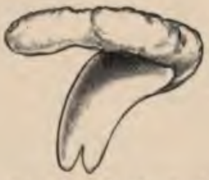
Chronically inflamed tubes, of which the left is displaced posteriorly, and its fimbriæ are adherent and closed. The right has reached posteriorly to the uterus to the left ovary, to which it is now attached by bands. The ovary contains follicular cysts.

With permanent closure of the distal ends only, they may be in their normal situations, or latero-posterior; or the extremities of both tubes may be adherent to each other posteriorly (fig. 59); or one may be adherent laterally or posteriorly, with retraction of the uterus to that side, and the other pass from its own side over, either behind, or in front of the uterus, to the neighbourhood of the opposite ovary, and all these parts be thus adherent (fig. 60). With closure of both ends and accumulation of fluid, the tumour thus formed may occupy the lateral cavity of the pelvis, and be thus adherent; and on further increase the superior part may rise out of the pelvis to an extent proportionate to its size, which may be considerable. The uterus is thus pushed over to the opposite side, and the other tube is angled; and if similarly affected and enlarged, it may occupy a position above the level of the uterus, and form a tumour

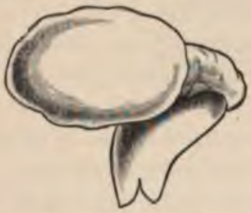
FIG. 61.



The right tube, chronically inflamed, shortened and convoluted, with closed fimbriæ is anterior to the right ovary, and both are densely bound down by adhesions. The uterus is left latero-posterior. The cervix is deeply lacerated.



The left chronically inflamed tube displaced to the right.

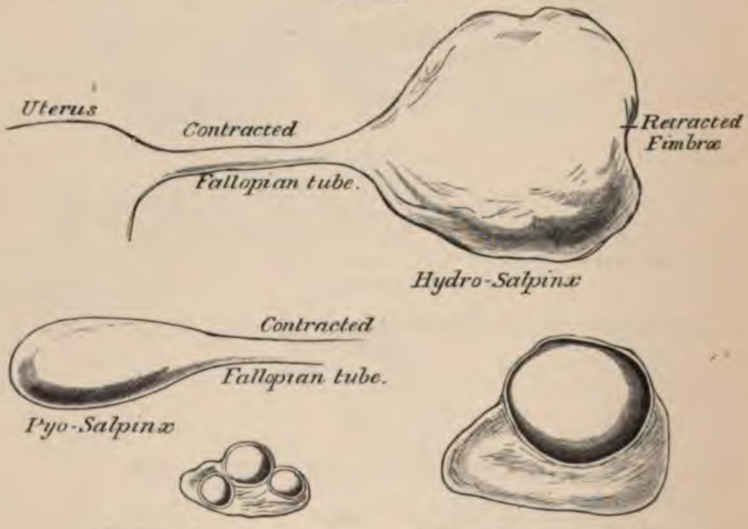


Large follicular cystic tumour of left ovary displaced to the right of the uterus.

reaching to the level of the umbilicus, or it may pass over the uterus and become adherent on the opposite side.

In the early puerperal septic states the tube may be enlarged, and its mucous membrane inflamed and soft, and contain some thin acrid serum, muco-pus, or thick pus. If the patient live, distal adhesion probably occurs, and perhaps also proximal stenosis or closure.

FIG. 62.



Section of atrophic ovary showing small follicular cysts.

Section of ovary showing large follicular cyst.

The quality of the fluid contents of such tubal tumours is determined by the stage of pathological evolution. On the occurrence of inflammatory thickening of the mucous lining it is at first thin and clear; presently viscid and opaque; and, by septic contamination, purulent. Such appearance is modified by the occurrence of the escape of menstrual flow, which additionally puffs its tissues, and adds blood to its contents; thus, at the site of stenosis, diminishing its calibre and size, especially where passing through the uterine wall. The occurrence of purulent salpingitis is rare in virgins.

The contents of a pyo-salpinx may undergo fatty degeneration and absorption, whether they have previously discharged into adjacent intestine, and the opening has been closed by contracting peritonitic adhesion; or, the tubo-visceral sinus remaining, they have ceased to accumulate, perhaps by the influence of the density of surrounding peritonitic thickening; thus one tube may subsequently be found to contain pus, perhaps tainted with fæces, and the other a pultaceous semi-solid mass; or be lax with opaque, thin, fatty, or almost clear fluid.

In chronic tubal gonorrhœa, strictures may have occurred in the tube, and the sac contents are necessarily purulent, septic, and auto-infectious with regard to the endometrium and vagina, on their occasional escape.

Causes.—The causes are obstructive or septic, and may be classed thus:

1. Atresia of the uterus or vagina; (*a*) virginal, (*b*) parous, (*c*) operative.

2. Endometritis; (*a*) virginal, (*b*) parous, (*c*) operative.

In both the virginal and parous the causation is accentuated by angling of the tubes by evolutionary displacement of the uterus or tubes.

3. Gonorrhœa.

4. Obstruction of the tubes by tumours, and peritonitic adhesions, whether of the uterus, the tubes themselves, or other adjacent structures.

Mode of Causation.—1. (*a*) In virginal atresia, the os uteri, vagina, or ostium vaginæ may be congenitally closed. The menstrual fluid accumulating presently distends the uterus, and thus the secretion of the tubes finds no open canal of external escape, and is retained in and dilates them. The secretion recurring, the distension is increased, least marked at the uterine part of the tube, where the strong muscular walls of the uterus support it; more pronounced towards the middle, where its convolutions present the opportunity for dilatation; and less so at the fimbriæ, where the opening favours relief of tension by escape into the peritoneal cavity. Should the inferior closure of the uterus or vagina persist, some backward effusion into the peritoneum takes place through the fimbriæ, when a local peritonitis may close it.

(*b*) In the parous, the closure may be by cicatricial contraction of the vagina, by hyperplasia and stenosis in the healing of a small laceration of a small conical cervix; but the accumulating secretion is then liable to be septic, having been, in the process of healing, infected by micrococci from below.

(*c*) From operative measures the os uteri may be closed by the stitching together of the vivified lips, thus shutting up the tubo-uterine secretions, which in an early stage are liable to be septic, and extend to and distend the tubes; in a later stage, the catamenial discharges may dilate them, and need not be septic.

It may be that the pressure of expanding intra-uterine stems mechanically, and also by induced inflammatory thickening, closes the utero-tubal openings, and thus obstructs escape of secretions, which then also may be expected to be septic. Mechanical closure of the cervix uteri and cavity of the uterus by tents, whether laminaria or sponge, at once irritates the corporeal endometrium, and thus augments secretion, and at the same time obstructs its escape, and the tubes may thus become blocked and distended; such secretion is apt to be actively septic.

2. (*a*) But endometritis is the usual cause of tubal disease, and in the virginal class it is frequently of an active character. Occurring generally in vigorous sexual development, and particularly with congenital excessive or deficient size of the mouth, in which marriage has not happened at the required time, unsatisfied desire has produced a chronically congested state of the endometrium, which has advanced to virginal endometritis. The tubes participate in the primary congestion and subsequent septic inflammation, and are unrelieved by satisfied passion, or by the rest and vascular diversion induced by pregnancy. Some obstruction to escape is thus produced by the puffed and œdematous mucous lining, particularly where the tube is walled around in the solid muscular tissue of the uterus, and accumulation and distension take place external to the uterus. The tubes are thus heavy, and, in the lying position to which resulting pain inclines, and which is assumed at night for more than a third of the twenty-four hours, and in the erect posture to a less degree, fall towards Douglas' pouch, and drag backwards on the fundus, which they thus tend to render perpendicular, retrovert, or retroflex. Relative displacement of

the tubes to the uterus at their junction is thus effected, and an angle of obstruction is induced. Two difficulties of passage at the utero-tubal junction are thus presented: the congested thickened membrane, and the angling. The secretion accumulating, some fimbrial effusion takes place, and a limited peritonitis, which does not necessarily induce occluding adhesions, but may be recurrent; but should the quantity and quality of effused secretion be sufficiently irritating, the fimbrial extremity becomes adherent to the adjacent structures, and the canal is occluded. There being no structural closure of the uterine end, secretions may find their way, under the pressure of distension, through a stenosed tube into the uterus, but always with difficulty, so that inflammatory changes advance in the tube, hyperplasia ensues, and a structural stenosis results. The secretions then accumulate in the tube occluded at both extremities, and a tubal tumour results. Yet under the great pressure of advance in the direction of least resistance, intermittent escape by the uterine extremity may still be effected, with subsequent refilling; in the absence of this, the distal adhesions may yield, or the wall of the tube may rupture laterally. Such virginal salpingitis is generally actively inflammatory, the sexual activity being marked; but occasionally cases occur in which stenosis of the cervix of a feebly-developed uterus produces the primary obstruction, with fimbrial effusion and peritonitic adhesions, in which the sexual passion being feeble, or more frequently absent, tubal secretion almost or quite ceases, and atrophy ensues.

(*b*) In the parous, tubal disease may be puerperal and contingent on endometritis induced by septic infection resulting from retained and necrosed pieces of placenta, membranes, or clots. The secretions from the tubes are by continuity infected, and the mucous membrane becomes inflamed, œdematous, and thickened. At the fimbriæ this septic secretion may effuse into the peritoneum. Should the patient recover from such septicæmia, which, when relieved early by removal of the decomposing material, is usual, subinvolution of the muscular and mucous coats of the uterus (chronic parous endometritis) and of the tubes may persist.

But the most common mode of causation of tubal disease from parous endometritis is through laceration of the cervix, inducing uterine subinvolution. If the mucous membrane of the tube have become thickened by septic puerperal inflammation, or by subinvolution, by continuity of relaxation from the flabby lining membrane of the uterus, whether the heavy fundus presently fall backwards or forwards, and it generally does one or other, some angling of the tube at the tubo-uterine junction is effected, and thus some obstruction to escape of tubal secretion; and by irritation of distension, the tubal mucous membrane becomes more congested and thickened. Being thus unduly heavy, the tubes tend to fall towards Douglas' pouch; if this be occupied by the retroflexed body of the uterus, the tubes are crowded in the latero-posterior position, and, on removal of the body of the uterus, may frequently be felt to fall posteriorly; on the recurrent retroflexion they give place to the uterus, and assume their former position, but the lumen remains stenosed at the angle of flexion. Should the subinvoluted uterus and lacerated cervix be cured, the tubes participate.

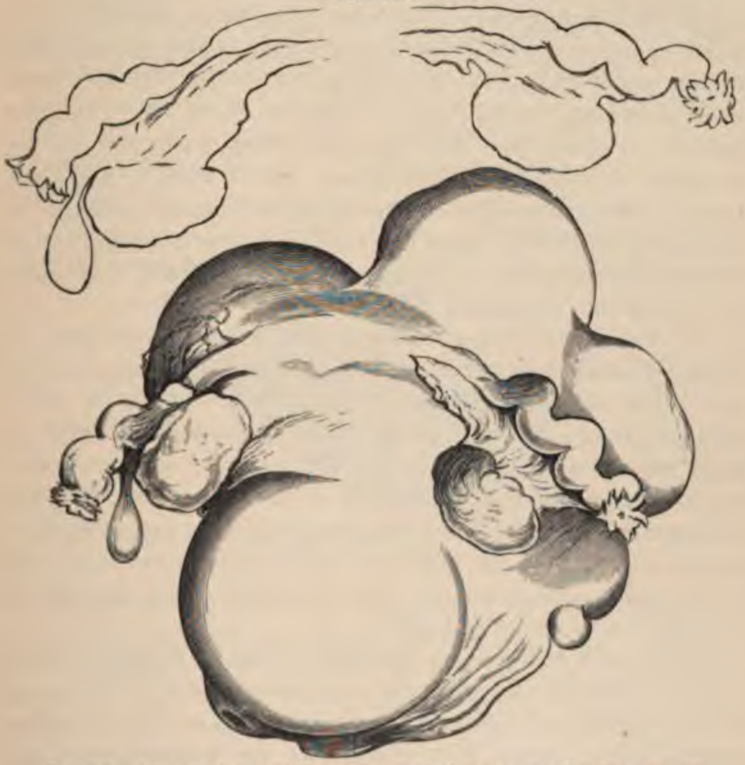
A more serious result is produced by retraction of the uterus to one side by cellulitic cicatrisation, of which the injury is frequently induced by cervical laceration beyond the vaginal junction into the broad ligament, followed by septic puerperal endometritis and cellulitis. On healing the uterus is often drawn to that side, and the angling of the tube is persistent.

(c) Operative endometritis is unhappily a frequent cause of permanent tubal disease. Whether this be, with the cervix undilated, by the application of irritants to the endometrium, the coarse use of the sound or other instruments, the closing of the cervix by intra-uterine tents or stems, which in themselves may be septic, or whether operations about the endometrium or cervix be clumsily performed, which also may not be antiseptic, or vaginal pessaries be introduced which press on the irritable uterus, tube, or ovary, the lumen of the cervix is obstructed mechanically or inflammatorily, the accumulating secretions in the corporeal cavity become septic, inflame the endometrium, infect and distend the tubes, and readily effuse from the fimbrial extremity into the peritoneum, producing adhesions, and closing the fimbriæ for ever.

3. Gonorrhœal infection of the tubes is apt to be peculiarly

virulent. Originally affecting the cervix, or progressing from the vagina, if it infect the uterus, it attacks the tubes, and the gonorrhœal pus may rapidly effuse from the fimbrial extremity into the peritoneum, when, if death do not shortly ensue, which is happily rare, and the effusion be slight, adhesions form and close this extremity. The gonorrhœal matter and pus, for streptococci and staphylococci have generally mixed with the gonococci, then escape by the uterine opening, until, the acute inflammation subsiding, healing contraction narrows the tube, frequently in and beyond the uterine wall, obstructing escape. The matter, continuing to form in the middle of the tube, accumulates until it escapes, usually by the uterine end, the

FIG. 63.



Posterior aspect of a multiple myoma of the uterus, showing stenosis of the tubes at the proximal ends, with some distension of the outer parts. There were numerous peritonitic bands.

lumen yielding under the pressure of distension, and thus recurrent abscesses of the tube may form and discharge. If the contraction at the proximal end be too determined, or if the lumen be there closed, the pus continuing to collect finally discharges itself in the direction of least resistance into an adjacent viscus, which is usually the intestine, but occasionally the bladder.

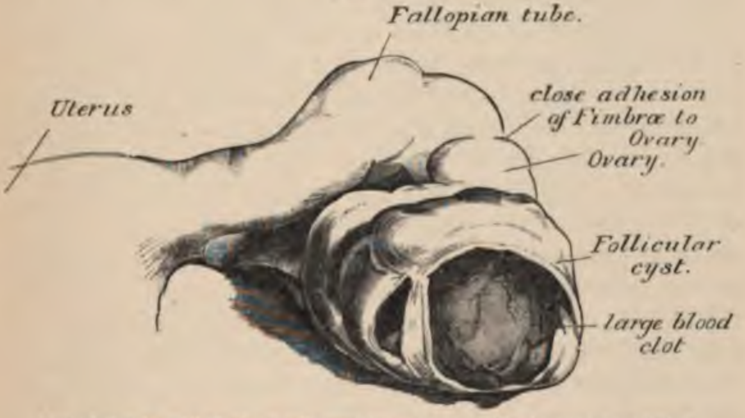
It is not necessary that tubal gonorrhœa should run so vigorous a course; the fimbriæ may not have become adherent, or but partially so, and the lining membrane may gradually more or less regain its tone, or irregular or recurrent stenosis persist. Gonorrhœa, if infecting either tube, apparently attacks both, and it is doubtful if they ever revert absolutely to their normal state, the uterine end being so minute, the body of the tube more distensible than the uterine portion, the liability to distal peritonitic adhesions so great, and the difficulty of effective local treatment practically insuperable.

4. Mechanical displacement of the tubes by tumours, or peritonitic adhesions, whether of the uterus, the ovaries, or of the tubes themselves or other adjacent structures, is liable to angle them, or by direct pressure to partially obstruct or close the lumen. Thus ovarian tumours displace them, and myomatous growths obstruct them, in either case in accordance with the individuality of the respective relations; and so of other neoplasms. Peritonitic fibrinous bands may mat the tubes and adjacent organs together in such a manner, that there is no possibility of a return to health.

Progressive Evolutionary Disease.—When an affection of the tubes has healed, but with some narrowing or angling of the tube, or partial adhesion of the fimbriæ, or a recurrent inflammation is in abeyance, it is possible for the semen to enter the tube, to pass through it, to reach the ovary, to impregnate the ovum, and for the impregnated ovum not to enter the tube itself, but to develop on the peritoneum, the ovary, the fimbriæ about the Graafian site, or on more than one of these; thus an abdominal, ovarian, fimbrial, or ovario-fimbrial extra-uterine fœtation results. Should it enter the fimbrial extremity of the tube, and progress for some distance along it, it may, by the additionally congestive state induced by the pregnancy in a tube somewhat narrowed towards the uterine end, be permanently detained, and develop there, and tubo-ovarian, or tubal extra-uterine, fœtation is effected. If it should have progressed into the tubo-uterine region, which is rare, the fœtation is tubo-uterine or interstitial. The further evolution of extra-uterine fœtation is described in that chapter.

Auto-infection of the vagina from chronic gonorrhœa of the tubes often ensues, after the cure of the vaginal affection, from the passing downwards of the infected secretions.

FIG. 64.



Occluded tube with fimbriæ adherent to ovary; a follicular cyst containing large blood clot; ruptured in operation.

One of the most common early effects of tubal disease is temporary obstruction towards the uterine extremity; some of the accumulating secretion effuses at the distal end, peritonitis results, and the fimbriæ are closed by fibrinous adhesions. If the peritonitis be vigorous and general, matting of the affected parts results, and the tubes, uterus, ovaries, &c., are bound down by fibrinous adhesions in the position they happen to occupy at the time. If the effusion be gonorrhœal, and in the primary stage, a mild cohesive peritonitis binding down the fimbriæ occurs; but when the pus drips out of the fimbriæ the peritonitis is of intense virulence, and is general. The peritonitis affects the surface of the ovary, thickens it, and renders rupture of Graafian follicles difficult, with evolutionary ovarian follicular disease. The conveyance of septic or gonorrhœal matter through the tube into the follicle of the ovary induces ovarian suppurative action, and abscess of the ovary results.

If the uterine closure as well as the distal be complete and persistent, fluid accumulates in the tube, producing a tumour, which may contain more or less clear fluid or pus by septic infection, virginal, puerperal, post-parous, or gonorrhœal. If the fluid be clear or mucoid, and continue to collect, the wall of the tube may presently lacerate, and the fluid pass into the peritoneum, when a peritonitis results proportionate to the irritating quantity and quality of the effused fluid. If the contents be purulent, the pyo-salpinx advances, and the pus discharges itself in the direction of least resistance into a viscus; or by sudden pressure, before the production of peritonitic adhesions, or subsequently by their separation, into the peritoneal cavity. Such discharge, whether clear fluid or pus, from the distal end or side of a tube is liable to be affected by the passage of a large stool down the adjacent intestine, in labour, or by pressure of any kind, accidental, during examination, or operative; and the ensuing degree of peritonitis is dependent on the quantity and quality of the outpouring fluid. When the rupture is into the intestine, fæces and fæcal gas are liable to pass into the tubal sac and infect it; the pus then becomes tainted with fæces, and of a more virulent character. If the line of communication remain open, the system is seriously affected; but should the sinus close, or be stenosed, the accumulating fæcal pus infects the blood, and the temperatures are high and fluctuating, and the unrelieved condition eventuates in death.

By the malposition of the enlarged tube, thickened or cystic, whether it be that of retroflexion, posterior descent, or elevation, an angle of flexion is formed which, by constriction of the lumen of the tube, still further impedes the passage of the secretions, and increases the quantity of the retained contents of the tube, and thus its weight. This influence is noticeable on the position of the uterus, of which the fundus may be pulled backwards, and thus be retroverted or lateroverted, which is quite common in the virginal causation; or retroflexed, where it may be permanently retained by subsequent peritonitic fibrinous bands, and particularly by their contraction in healing; or the body may be pushed by the tubal tumour to the other side, whereby an angle of flexion of the other tube is determined, drainage impeded, and the size of the tubal tumour of one or both sides increased, and thus the opposite tube may be angled, and progress as secondary tubal disease.

The mode of rupture and the degree of irritation produced on the peritoneum by the various tubal effusions is described in the chapter on peritonitis.

Ovarian follicular disease is commonly induced by the thickening of the outer coat, and adhesions by peritonitis induced by tubal effusion ; and its evolutionary diseases ensue. In gonorrhœal tubal disease, the irritating secretion issuing from the fimbriæ may cause adhesions to the ovary, and, with rupture of a Graafian follicle under shelter of such adherent distal extremity, the gonorrhœal matter be directly conveyed to the ovary, and included by contraction of the follicle. Gonorrhœal inflammation results with formation of pus, frequently thin, and like skimmed milk, with pyogenic fever. The abscess may be of the ovary itself, or, by tubo-ovarián adhesion, be tubo-ovarian.

Symptoms.—The symptoms are those of the causation—that is, of atresic distension, endometritis, gonorrhœa, obstructing tumour, or causative peritonitic adhesive contraction, of the disease of the tubes themselves, and of the further evolutionary affections of the peritoneum, uterus, and ovaries, and of the viscus through which pus may pass.

In the atresic states, there is an absence of the catamenia, and no leucorrhœa, a sense of distension, and dorsal and lower abdominal pain till fimbrial effusion occurs, when peritonitis supervenes with its symptoms.

With endometritis, its symptoms necessitating examination, tubal disease is frequently found, and iliac pain from ovarian evolutionary affection invariably indicates coincident disease of the tube. It is thus impossible to separate the symptoms from those of the diseases of these organs, between which the tubes form a canal of communication. Remembering this, in endometritic causation the symptoms may be described as leucorrhœa, bearing down, dysmenorrhœa, menorrhagia, or, less frequently, amenorrhœa, cerebro-spinal neuralgia, iliac pain, constipation, and debility.

From gonorrhœa the symptoms are of sudden vaginitis and purulent discharge, and frequent and painful micturition. Under any conditions, except proximal closure of the tubes, reinfection of the vagina and uterus is usual, when vaginal curative treatment is stopped.

The tubes, being far the least sensitive, afford least evidence of their disease. On closure of the distal end, and narrowing without complete closure of the uterine end, purulent collections in the body of the tube may discharge themselves by the uterine end at intervals; on obstruction at both ends the tube becomes distended, when its enlargement creates defined symptoms of pressure, and, in the case of pyo-salpinx, of pus collection and pyogenic fever.

Of the evolutionary affections the successive attacks of appreciable peritonitis, except in the case of progressive salpingitis making its way laterally through the wall of the tube, may be symptomatic of the slight recurrent effusion from the fimbriæ, but most frequently of the evolutionary obstructive ovarian affection and follicular distension and rupture, and not of tubal disease itself, though present. Pain in one or both iliac regions is present, accentuated at the catamenial periods.

Diagnosis.—The diagnosis is difficult only as to distinction between a tumour, evidently of the appendages, being of the tube or of the ovary; but the latter affection, except in the case of progressive ovarian or parovarian tumour, is invariably evolutionary from tubal disease. In the milder conditions of tubal disease, one or both tubes may be felt latero-posteriorly to be curly, thickened, and perhaps fluctuating, or adherent posteriorly. When containing fluid the fimbriæ are necessarily adherent, and there is proximal closure. With a retroflexed adherent uterus the tubes are certainly adherent, having induced the peritonitis, and being implicated in the adhesions. Tubal extra-uterine fœtation is elsewhere described.

Peritonitis, without other evident causation, is most frequently induced by tubal effusion, or is evolutionary from it through the ovaries. A general pelvic matting is thus highly suggestive of an original tubal causation, and therefore of its continued presence. All the preceding conditions are thus diagnostic or suggestively diagnostic of more or less extensive or original tubal disease.

Prognosis.—In atresic distension, from whatever cause, the woman is in imminent danger, for at any moment effusion may occur from the fimbriæ. Should the condition be operative, and the fluid thus escape, abdominal section only is likely to save her life.

If from inflammatory obstructive disease about the cervix or endometrium, whether virginal or parous, the tubes become thickened and misplaced, yet distal tubal effusion and peritonitic adhesion have not closed the fimbrial extremity, and the causation be cured by treatment, the tubes may quite recover, and be absolutely normal. Should such treatment be just too late, or the condition be such that the tubal inflammation in healing has produced a narrowing about the tubo-uterine locality, extra-uterine fœtation is liable to occur; and so also, if the tubal congestion be recurrent, during a quiescent interval, or after a long period of tubal inflammation with gradual tendency towards health.

In fimbrial closure evolutionary disease of the ovary is essential. In uterine closure of the tube peritonitis must ensue; if it be not fatal, and it rarely is in this stage, fimbrial closure with ovarian evolutionary disease must result. In double closure, hydro- or pyo-salpinx may ensue, of which hydrosalpinx is liable to rupture through yielding fimbrial adhesions or through the lateral wall, when peritonitis occurs proportionate to the quantity and quality of the effused fluid; pyosalpinx generally effects peritonitic adhesions to an adjacent viscus, usually the intestine, and the pus thus discharges in the direction of least resistance; or, under pressure external to the tumour, ruptures into the peritoneum, and produces an inflammation which is apt to be fatal unless abdominal section be quickly performed.

CHAPTER XIV.

EXTRA-UTERINE FŒTATION.

Definition.—Pregnancy, in which the ovum is situated outside the uterine cavity.

Condition.—The extra-uterine impregnated ovum, abdominal section for which is performed at the Women's Hospital once in seven of all such operations, is said to be—

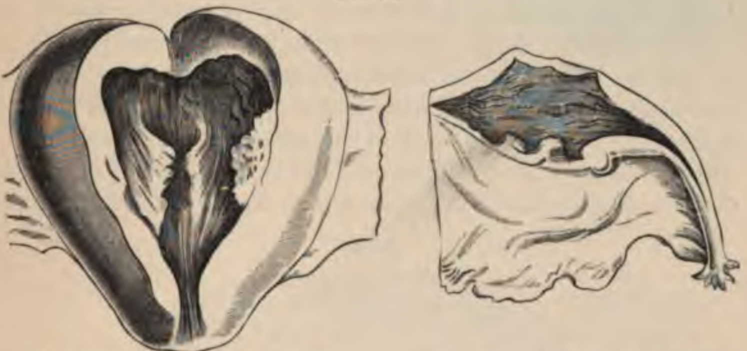
1. Tubal, when it is primarily situated in the body of the tube;
2. Interstitial, in that part of the tube which is in the wall of the uterus;
3. Ovario-tubal, partly on the ovary and partly in the fimbrial end of the tube;
4. Ovarian, in the follicular cavity, or on the ovary;
5. Abdominal, in the abdominal cavity, but not maintaining a primary attachment to any of the before-mentioned parts.

In an individual case of extra-uterine fœtation of large size, it is frequently very difficult to distinguish the actual original attachment except on careful dissection. It is seldom that this can be attempted in operation; but occasionally cases offer themselves in the post-mortem room, so that they can be frozen and thus examined and defined.

1. The tubal is far the most common, and is frequent. The developing ovum is situated in the tube between the fimbriæ and the outer wall of the uterus, and forms a growing tumour. When near the fimbriæ, if the tube be not previously adherent and the uterus be not retroflexed and occupy the posterior space, it generally falls into Douglas' pouch. As it grows, the tubal wall becomes distended, and a separation and rupture of

the villi are apt to occur at some time after the fourth week of pregnancy, whereby hæmorrhage results; but its vitality may continue, so that it is not rare to remove a tubal fœtus of the age of three or four months. Hæmorrhage occurring, either from the first or a succeeding one, blood escapes into the peritoneum, and its inflammation is induced. The rupture may take place either through the lateral wall into the peritoneal cavity, or through the lower wall into the broad ligament,

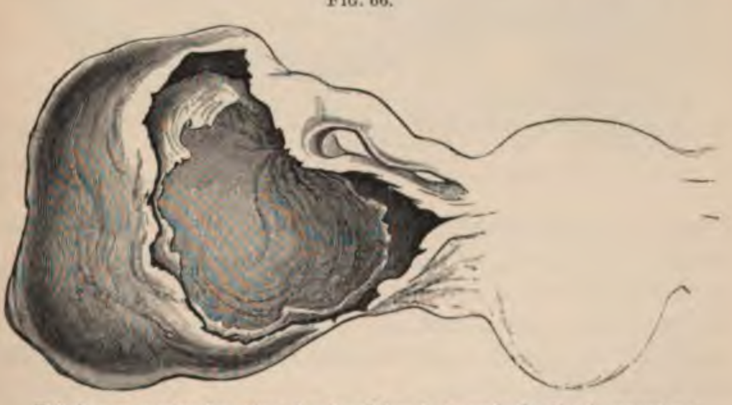
Fig. 65.



The uterus, containing decidua. (*From a specimen in the University Museum, Melbourne.*)

Tubal extra-uterine fœtation ruptured at the fourth week, with fatal hæmorrhage.

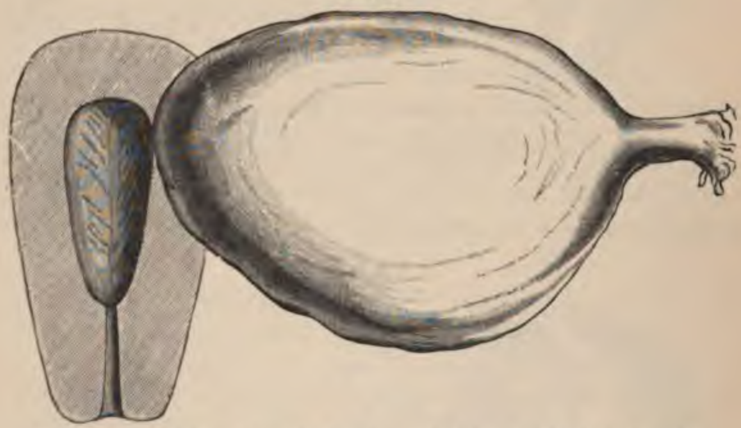
Fig. 66.



Tubal extra-uterine fœtation, developed largely towards the distal extremity; ruptured between the fifth and sixth months. The fœtus measures 11½ inches, the sac 5½ inches, the uterus 4 inches. (*From a specimen in the University Museum, Melbourne.*)

forming a hæmatocele of the areolar tissue; into the tube towards the distal end, when blood escapes through the fimbriæ into the peritoneum; or at the uterine extremity, when blood flows into the uterus, and thus by the vagina downwards. The early death, or prolonged vitality of the ovum depends on whether rupture of the amnion does or does not take place, and also, if the amnion be not burst, on the amount of blood effused, since the ovum may die from excessive inanition, and also by pressure of the effused blood, as well as by excessive peritonitis, which affects its blood-supply and its nutrition. In the absence of these the life of the ovum continues, and thus the fœtus may attain to a considerable size, and frequently to three or four months. The cavity of the uterus in all conditions of extra-uterine fœtation is apt to increase from half an inch to an inch in length, but not necessarily so. A decidua forms in the cavity of the uterus, and comes away after the death of the ovum, if the woman live.

FIG. 67.

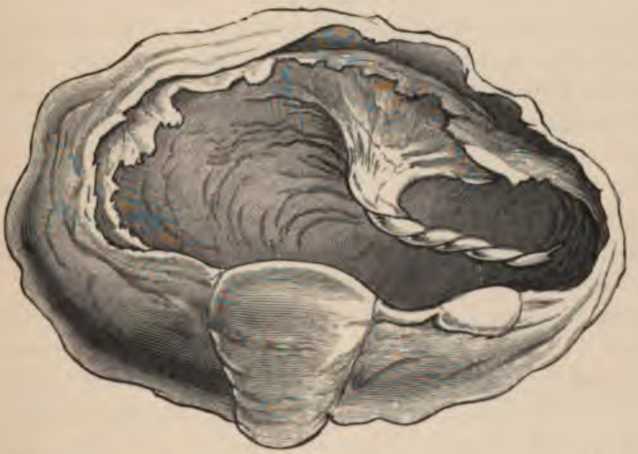


Interstitial-tubal fœtation at the fourth month, enlarging chiefly in the tube.

2. In the interstitial situation—that is, in the wall of the uterus—the enlargement occurs generally towards the outer or inner part rather than in the exact centre. On growth it may if in the centre, produce an apparent enlargement of the uterus itself; but the uterine cavity is not materially increased, nor proportionately to the age of the pregnancy, nor to the size of

the tumour. More frequently it encroaches at one or other end, so that the dividing wall, separating the ovum from the uterine cavity, has been divided, and the pregnancy terminated normally, or spreading into the tube, form an interstitial-tubal pregnancy. In none of these conditions is laceration generally of so early a date, the ovum being more densely supported, and the placenta, perhaps attached laterally rather than at one or other end, may not be under the influence of great tension. On the occurrence of rupture great hæmorrhage may take place through the uterus, otherwise the conditions are similar to those in the former case.

FIG. 68.



Tubo-peritoneal, or tubo-ovarian extra-uterine fœtation at term. Fatal hæmorrhage from rupture. The fœtus measures 15½ inches, the sac 11 inches, the uterus 5 inches. (*From a specimen in the University Museum, Melbourne.*)

3. In ovario-tubal pregnancy, there was probably an original adhesion between the parts. The developing ovum may separate the adhesions and grow into the peritoneum, part remaining free in the peritoneal cavity, part perhaps becoming adherent, and part attached to the ovary and fimbriæ by the nutrient vessels, where presently develops the placenta, so that, on operation, large vessels may be there tied and form a pedicle. Such a pregnancy need not rupture at an early date, if at all. It may be that a so-called abdominal pregnancy is originally of

this description; and on operation at a later date, with a fœtus perhaps at or after term, it is difficult to define the exact site of early attachment, adhesions being so extensive and intimate, and the placenta so large and spread out.

4. In ovarian pregnancy, the ovum develops with an attachment to or at the edges of the follicle, and grows after a similar manner. Exact demarcation is most difficult, for inflammatory fimbrial implications are usual.

5. True abdominal pregnancies are by some denied, on the ground that an ovum cannot attach itself to the peritoneum, which would appear not more difficult for an ovum than for a hydatid; but Hart gives a plate in which the placenta has an attachment to the higher abdominal contents. When I have removed extra-uterine children of ten and twelve months' development, it was impossible to define the exact relations, since the general inflammatory matting was so extensive. It is not within the compass of this paper to enter further on this discussion.

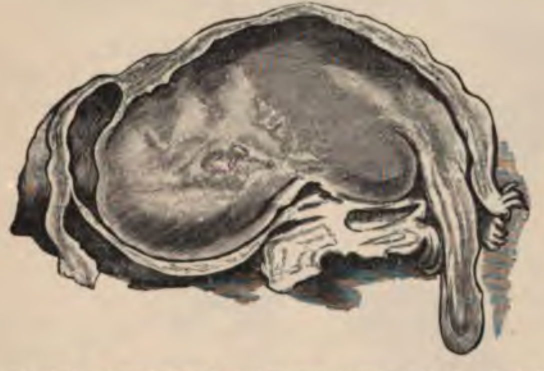
In chronic cases the fœtus may have been strongly encapsuled and be in a state of suppuration, or fatty or calcareous degeneration, called lithopædion, whence may have arisen septic conditions, with perhaps extrusion of fœtal bones.

Causes.—The cause is always disease of the tubes, virginal, parous, or gonorrhœal, whereby the impregnated ovum is prevented from entering the uterus, and the site of the future development is external to the site of the first obstruction with which the ovum meets. Thus in a tubal pregnancy the stenosis is at or external to the outer uterine wall; in an interstitial pregnancy, at or about the entrance of the tube into the uterus; in the ovario-tubal, just internal to the fimbriæ; in the ovarian, at the fimbriæ, or the fimbriæ are inadequately applied to the follicle; and similarly in the abdominal, but the ovum does not primarily attach itself to the follicle or the fimbriæ. The tube is thus in some degree always ineffective and diseased. Such disease may be of a mild character—in fact, mildly catarrhal—so that at one time it is patent and presently stenosed; or it may have been diseased and almost closed for years, and, by a natural tendency towards health, temporarily become patent; or it may be that treatment may have removed the cause of the tubal disease and relieved it, rendering it temporarily patent; but previously prolonged disease may have sufficiently stenosed it to hinder the transit of the impregnated ovum into the uterus.

Again, impregnation through a tube applied to the opposite ovary may occur, and the ovum be obstructed by the acute angling of the tube with the uterus; but the other tube was affected and probably adherent, or it would have duly applied itself.

Or the spermatozoa may traverse the sinus of a vagina in a woman whose uterus has been removed, and impregnate an ovum which cannot escape externally.

FIG. 69.

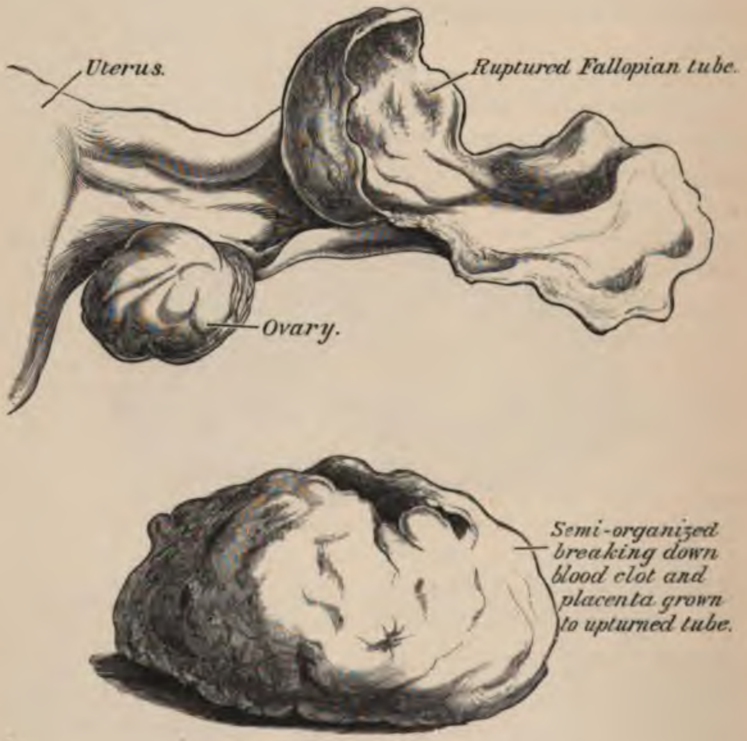


Section of tubal extra-uterine fœtation aborting through the fimbriæ. At operation fluid blood was escaping. The tubal contents are laminated. (*By the kind permission of Dr. Rothwell Adam.*)

Mode of Causation.—The manner in which the causation of extra-uterine fœtation occurs is that the tubes have undergone pathological changes, probably invariably inflammatory, whereby the calibre of the lumen is reduced.

During the activity of the cause of the tubal disease and the resulting inflammatory thickening of the tube itself, the spermatozoa were unable to traverse the tube and reach the ovum, and no pregnancy occurred. On an improved condition at the cervix and in the corporeal endometrium and tube the semen entered, traversed the uterus and tube, arrived at the follicle, and impregnated the ovum, which thereupon commenced its progress towards the uterus; but though the lumen of the tube had been slightly permeable, the congestive influence of pregnancy again puffed it, and the impregnated ovum was hindered, and acquired an attachment at the site of obstruction and delay, and there commenced to develop as an extra-uterine fœtation; the site being determined externally to the site of the stenosis.

FIG. 70.


Uterus.
Ruptured Fallopian tube.
Ovary.
Semi-organized breaking down blood clot and placenta grown to upturned tube.

Extra-uterine tubal fœtation.

Progressive Evolutionary Disease.—Some form of pregnancy in the tube having occurred, its growth proceeds, and the chorionic villi form around. Laterally the tube supports the membranes, and on the internal aspect is the uterine wall; but externally at the lumen of the tube is no such strength of structure to counteract the tension from within; thus, increase of the ovum continuing, the villi may yield at this point and bleed, so that blood passes along the tube to the fimbriæ, and thence may be effused into the peritoneum—if towards the uterus, the greater hæmorrhage is in this direction.

Should the rupture of villi occur laterally, blood is poured out external to the membranes, so that the ovum is to a great extent surrounded by a thick coagulated clot; but in part, sooner or later, the flow escapes by tension externally into the peritoneum, and produces an irritation inducing peritonitis; but, blood being readily absorbed up to a certain quantity, outlying adhesions take place, and blood clots are attached to the peritoneum. Should an ovum die by this action, and be surrounded by vital clots and nutritive adhesions, it may be encapsuled and undergo degenerative changes. The uterus at first is pushed over to the opposite side from the tumour, either anteriorly, or posteriorly, and the position may be maintained permanently by adhesions; but if the tumour be small and atrophic, the liquor amnii escape and be absorbed, and the quantity of blood be quite limited, contraction may drag the fundus towards the affected side, or outwards and backwards, where the ovum is generally situated.

If very extensive, such an original or subsequent hæmorrhage, which may fill the abdominal cavity to above the level of the umbilicus, may be fatal in a few hours. More frequently, however, the rupture is recurrent, and the subsequent hæmorrhage interferes with the vitality of the first: for the first blood has already attached itself to the peritoneum, and the second has no such opportunity, and is unnourished; it thus dies, and in its necrosis affects the life of the first, so that this also becomes morbid. The amnion also by this time has ruptured, the fœtus has died, and it and the remainder of the ovum and the blood-clot have become necrosed. A low peritonitis ensues, in which is no capacity of encapsulation: the condition may appear to improve, but on operation the state found is such as must have ended fatally. Pus and fœtid gas may form, and a low typhoid state ensues, which is presently fatal, it may be many weeks after the original rupture, if operation do not successfully remove the cause—that is, the dead ovum, lacerated tube, and clots.

But a rupturing sac may yield towards the broad ligament, and produce an extensive hæmatocele there, which is subject to the same influences of nutrition, absorption, or necrosis as the above; or there may be such a rupture as permits the ovum to expand and continue its vitality, the placental attachment being on uninjured structures, spreading outwards on to more outlying organs.

Such a peritonitis necessarily includes the ovary, uterus, intestines, and bladder; and frequently dull-brown coloured clots are found adherent to all these parts, the serous covering of which was absorbing and nourishing them. Subsequently, on their necrosis, these parts participate in the diseased action, and such absorption produces septic effects on the system.

It is not rare that the veins of a necrosing ovum are inflamed, effecting thrombosis. Such a phlebitis may extend through the ovarian vein, on the left side into the renal vein, on the right into the inferior vena cava, and thus obstruct the outflow of blood from one or both kidneys. These are therefore engorged, may cease to secrete urine, and death follows, either from uræmia, acute suppurative phlebitis, or from the escape into the vena cava of a detached clot.

In the event of a fœtus of an age to have hard bones dying, becoming encapsuled, and undergoing degeneration, whether fatty, calcareous, absorptive, or suppurative, the ends of the bones may, by continuous pressure, make their way through the sac, producing in their passage adhesive peritonitis; and thus advance until they reach some viscus, whence they may perhaps escape from the body. This is most commonly through the intestine, the outer skin, and the bladder. The process is usually septic and suppurative; and there being such a number of bones, the slow recurrence of the passage usually wears out the woman.

Symptoms.—The usual history is that some years previously the woman had a child, or she has never had one; she may have had successive abortions, or gonorrhœa; she has been suffering from the womb for some years, and has gradually improved in health, perhaps under treatment; and presently the catamenia became overdue, and she believed herself pregnant; yet the uterus is not, or is but slightly, enlarged on the introduction of a sound; and the tumour may be felt distinct from the uterus. Occasional irregular uterine hæmorrhages occur, which suggest the probability of miscarriage, as if of a uterine pregnancy; and a uterine decidua may be passed then or later, *en masse* or in shreds. Suddenly, without apparent causation, intense pain in the lower abdomen, faintness, and perhaps collapse, symptoms of internal hæmorrhage and peritonitis, occur, from which the woman may be in imminent danger. Or she may presently improve, and such attacks be recurrent. The original peritonitis, of a low character, may persist, but the pulse and temperature improve, even though, on opening the abdomen, the condition may be shown to be necessarily presently fatal. Without operation in such case it presently becomes imminently fatal, when interference is too late. Again, after primary rupture and peritonitis, the condition may improve, and slow recovery ensue, with diminution in size of the tumour, when encapsulation and absorption are taking place; but the symptoms in proportion to the possibility of recovery are most deceptive, because the encysted necrosing ovum and decomposing blood-clots being a virulent causation of peritonitis, absorption may for a time be delayed.

Finally, in certain cases, there may be a general malaise for many years, and fœtal bones gradually be discharged by the intestine or other direction.

The symptoms of a non-rupturing abdominal fœtation are those of uterine pregnancy, with constant complaint of pains of a stretching character, and disturbance of the bowels, diarrhœa perhaps alternating with constipation, and the woman cannot get about comfortably. The fœtal heart may be heard, and fœtal movements felt and seen; but, perhaps after the normal period of gestation, these gradually cease. At the end of the nine months there may be a mimic labour with some loss of blood and escape of the decidua. The woman continues in a state of malaise, and the fœtus undergoes absorptive changes.

Diagnosis.—The diagnosis is determined by the presence of the symptoms of pregnancy, with a uterus apparently distinct from a tumour, and on the introduction of the sound it is found to be empty; but it is necessary to be certain that the bulb of the instrument is not caught in the wall of the uterus, or against the membranes of the ovum. At the time of rupture, with symptoms of more or less hæmorrhage, if the fœtation be of a duration greater than that of the woman's ordinary catamenial interval, there is perhaps evidence of a prolonged menstrual interval, or cessation of the catamenia for some months, and therefore of possible pregnancy with intense collapsing abdominal pain and sense of distension, and perhaps peritonitis, and an empty uterus. It is true that this might be diagnostic also of an ovarian tumour having twisted its pedicle, or ruptured; but if no exertion or accident have occurred, and the symptoms show themselves when the woman is quiescent, the balance of evidence is in favour of ruptured extra-uterine fœtation. In either case the treatment is the same.

Again, there may be recurrent hæmorrhages from the uterus with final extrusion of the decidua, leading to the belief that abortion has occurred, yet the fœtation be vital and progressive, thus tending to the supposition that the tumour is a complicating ovarian; or particularly a dermoid, rendered more probable by the sensation of the presence of bones. The fœtation may later die and necrose, simulating ovarian with twisted pedicle. The prolonged catamenial interval with subsequent uterine hæmorrhages and feeling of bones in the tumour, with perhaps septic action, is a combination highly suggestive of ectopic gestation.

In the non-rupturing growing form, the fœtal heart may be heard in due course, and closely simulate normal pregnancy with very thin uterine walls; but the outline of the small uterus distinct from the tumour can generally be defined, the sensation of which may, however, be due to a somewhat enlarged ovary. Such cases are difficult of certain diagnosis; but before operation, on the assumption of ectopic gestation, it is better to pass a sound, if possible between the membranes and the uterus, and run the risk of inducing premature labour, rather than to open the abdomen and find a normal pregnancy. In no case would exploratory puncture be serviceable, for the fluids are the same, no additional knowledge would be gained, and useless danger incurred.

Prognosis.—The prognosis in the tubal form is in expectation of rupture, which will at a comparatively short time be fatal; if not immediately so, that illness will continue; and that finally necrosis of the ovum and clots with peritonitis, probably presently fatal, will occur. If the fœtation be abdominal, the sac may increase and produce a progressive malaise, which finally necessitates an operation for the removal of a fœtus, perhaps at or over the term of pregnancy. If such be not performed, or in any case after the bones of the fœtus are formed, the ovum may be encapsuled and undergo fatty or absorptive degeneration, or perhaps later perforation by the ends of the bones, or suppuration may occur. In the latter case, the bones make their way externally with inflammatory suppurative wasting; in the two former, an obstructing tumour, generally with malaise, exists.

CHAPTER XV.

ATRESIA.

Definition.—Atresia is a closure at some part of the utero-vaginal canal, whereby the mucous and catamenial secretions, when formed, are prevented from escaping.

FIG. 71.

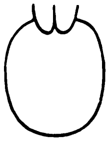
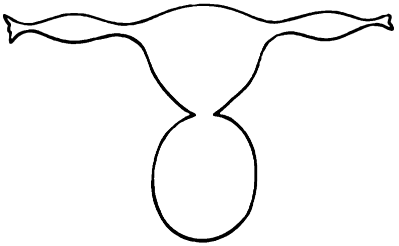


Diagram of atresia of the vaginal outlet, showing distension of the vagina by the catamenial fluid.

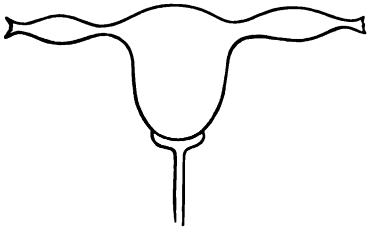
FIG. 72.



Atresia of the vaginal outlet, showing distension of the vagina, uterus, and tubes nearly to the fimbriæ.

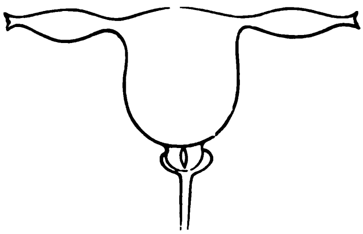
Condition.—1. The nymphæ may be adherent, and the vagina, uterus, and tubes distended by menstrual fluid.

FIG. 73.



Atresia of the external os uteri, showing distension of the uterus and tubes.

FIG. 74.



Atresia of the internal os, showing distension of the uterus and tubes.

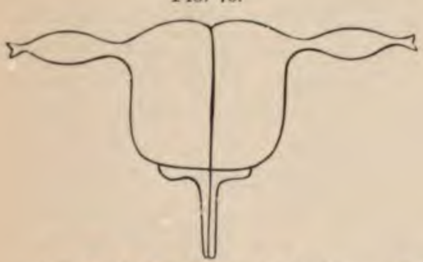
2. The hymen may be complete when the distension is similar to the above; the hymen is prominent and convex.

3. The mucous walls of the vagina may be adherent; or, the mucous and muscular structures being absent, the vaginal space is occupied by connective tissue. If the uterus, tubes, and ovaries be normally developed, the catamenia accumulate in them and distend them.

4. The outer or inner os is closed, and, the superior organs being normal, the secretions collect in the uterus and tubes.

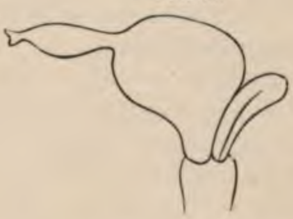
Should the uterus be double with such closure of the os, one or both of the uterine canals and one or both of the tubes may be distended.

FIG. 75.



Atresia of the inner os in double uterus and vagina, showing distension of the uterine cavities and tubes.

FIG. 76.



Atresia of the external os in bifid uterus, showing distension of one cavity and one tube.

Causes.—Closure of the utero-vaginal canal may be—

1. Congenital, or
2. Induced.

Mode of Causation.—1. Of the congenital modes of causation—

(*a*) Cohesion of the nymphæ is a slight progress of development beyond the female type in the direction of the closure of the male scrotum. There is no apparent entrance to the vagina, and the hymen is not seen.

(*b*) The hymen is complete. It commences to develop at about the beginning of the fifth month, and is forced down at about the sixth month in the formation of the lumen of the vagina. Should it continue its growth, it may close the canal.

The lower end of the vagina being thus occluded, the catamenial secretions accumulating may press into the vagina and dilate it. The uterus may similarly be distended, and finally the tubes.

(*c*) The mucous surfaces of the vagina may be adherent by deficiency of formation of the permanent lumen, or a still farther deficiency of formation may prevent the development of the mucous or muscular tissues. Minot, in his description of the development of the vagina, says that during the fourth month the vaginal limb of the genital cord, formed of the two laterally placed Wolffian ducts and the two Müllerian ducts, which latter lie nearer the median line and more dorsally, expands laterally and becomes flattened dorso-ventrally. Its epithelial surfaces meet and grow together, closing the lumen of the vagina, and forming an epithelial lamina, the cells of which now commence a rapid proliferation, which thickens the vagina and forces down its lower end, thus forming the hymen, because the actual diameter of the vagina where it is connected with the sinus does not share in the general dilatation. Finally, the permanent lumen of the vagina begins to appear during the sixth month, and is formed by the breaking down of the central cells of the lamina. This process penetrates the cup-shaped outgrowth which embraces the lower end of the uterus, which protrudes into the vagina in consequence of the vagina growing up around the extremity of the uterus.

From the above it is seen that an arrest of development in the formation of the mucous and muscular structures of the vagina may occur between the fourth and sixth months, whereby the space remains filled only with connective tissue, and during the sixth month the lumen between the surfaces of the mucous membrane may not be ormed or actually completed. Hence atresia of the vagina.

The vagina being thus closed more or less to its summit, menstruation occurring, the catamenial secretions may accumulate in the uterus, in the cup-shaped roof which embraces the lower end of the uterus, and in the tubes.

(*d*) The external or internal os uteri may be closed. About the end of the eighth week the Müllerian ducts commence to fuse in the median line about two-thirds down from the cephalad end of the genital cord, and the fusion progresses upwards, and is completed by the end of the third month, forming the uterine canal, which is thus always open, but in the earlier stage double.

Should development of the lumen at the lower end of the uterus not proceed, or there be some arrest, the opening may be exceedingly small, and apparently closed by continuous growth of the stratified vaginal epithelium which often extends a short distance inside the os uteri.

In this case the accumulation of catamenial fluid may distend the corporeal and cervical cavities to the level of the outer os. If the closure be at the inner os the cervix may be thick and depressed, and the outer os and cervix be more or less patent, or also occluded.

When fusion of the middle layers of the Müllerian ducts has not occurred, or is incomplete, and the uterus is double, the collection may take place in one or both of the canals.

All these organs may be coincidently deficient in development and minute, most frequently in the case of non-formation of the mucous and muscular vaginal walls from arrest of development of the genital cord, and no ovulation or menstruation occurs, and there is no distension.

2. The induced modes of causation are—

(*a*) By inflammatory cicatrisation, and

(*b*) By operative measures.

(*a*) When the child, and particularly its head, is long delayed at the end of the first stage of labour, necrosis of the lower uterine and upper vaginal structures may take place. Sloughs more or less extensive gradually separate, and contraction of the healing tissues may close the canal.

(*b*) In operative measures, the application of the actual cautery or of strong caustics, or the frequent application of mild ones may produce a gradual and progressive contraction. After plastic operations on the cervix the opening may be rendered atresic by a too close introduction of the sutures, so that the pared sides of the lumen cohere. When the cervix is amputated by the circular operation without formation of flaps, the contracting interstitial structures may completely constrict the opening. A gradual progressive cicatrisation may take place after any operations on the cervix in which the opening is left of insufficient size, whether by the refusal or negligence on the part of the patient with regard to after-treatment, or by allowance of too close cohesion by the surgeon.

Progressive Evolutionary Disease.—The catamenial secretion accumulating in the cavity of the uterus, the latter presently reaches the limit of its capacity of distension, when it may rupture; and this may be induced by the increased quantity added at a menstrual epoch, by exertion, a blow, or pressure of any kind. The tubes are usually also distended, and when the retained fluid reaches the fimbriæ there is some effusion, and a local peritonitis occurs which closes this distal extremity. The lateral walls then bear the distending force, and may rupture, and a hæmatocele of the peritoneum or broad ligament ensues. When of the peritoneum, a low peritonitis is induced, and, whatever may have been the capacity of fibrinous encapsulation and absorption, these are affected by the recurrent catamenial effusion, so that the inflammatory action assumes a virulent or typhoid type. If the rupture take place into the broad ligament, the fluid travels in the connective tissue layer, and produces a low progressive cellulitis.

But if the quantity originally effused from the fimbriæ be large, the symptoms of peritonitis are at once marked.

Displacements of the uterus are proportionate to the locality and quantity of the menstrual effusion, and resulting peritonitic exudation.

Symptoms.—The girl has never menstruated, or after such a long confinement as has been indicated, or operation, there has been amenorrhœa. In the congenital causation, there has been pain in the back, and cerebro-spinal neuralgias and general malaise, with sense of increased distension at the menstrual epochs. In the chemical or cauterial causation, there is a gradual diminution of the menstrual flow with dysmenorrhœa, and finally its non-occurrence, a sense of distension, pain in the back and legs, and malaise; after a closing operation on the cervix, a continuous increase or persistence of temperature of perhaps half a degree to a degree; and, on fimbrial effusion into the peritoneum, a sudden rise of from five to seven degrees, with a subsequent progress, vital or mortal according to the treatment, and quantity and quality of fluid effused, which is usually septic.

Gradual subsequent closure affords the symptoms of caustic or cauterial atresia.

Diagnosis.—The non-occurrence of menstruation may instigate an examination, when congenital atresia of one or other variety may be found. The only difficulty may occur when the hymen is tight, the vagina deficiently developed yet the lumen formed, the uterus high and small, the os and cervix small and difficult to reach, with a tumour extending from the pelvis to some level between the pubes and the umbilicus, suggesting constriction of the outer or inner os. The introduction of a fine probe through the small opening may prove that the canal of the uterus is free, and the tumour may be of the ovary.

The diagnosis of the conditions of deficient development of the uterus and ovaries with atresia of the vagina can only be made on examination, or operation, according to the cohesions. Rectal examination with abdominal palpation under ether affords valuable assistance.

Prognosis.—Continued retention of the menses without operation certainly results in fimbrial peritoneal effusion, or uterine or tubal rupture.

In cohesion of the nymphæ, closed hymen, and adherent vaginal mucous surfaces, their separation cures the woman. If the mucous membrane is not formed, and the vagina be indicated more or less only by a cord of connective tissue, or even this be absent, after operative formation of a canal, such contraction in cicatrisation takes place, that it is maintained with difficulty and pain by marital rites, and rarely in the unmarried, or to a very limited extent; when coincident with deficient formation of the uterus and ovaries with amenorrhœa, little more than a short vaginal cul-de-sac persists; if the catamenia occur, a sinus remains, perhaps under frequent slight dilatation, through which pregnancy may result. When all the sexual organs are deficiently developed, the woman is of course necessarily sterile.

In parous cicatricial atresia, as well as in that induced by the action of caustics or of the actual cautery, the contraction is obstinate and progressive, and, after operation, apt to be recurrent. After plastic operations it is easily remedied by dilatation or division.

CHAPTER XVI.

PERITONITIS.

Definition.—Peritonitis is an evolutionary, mechanical, symptomatic inflammation of the serous membrane covering the abdominal and pelvic organs, producing an exudation of a quality sympathetic with the causation.

This disease is of the utmost importance, as it habitually causes the partial or complete prevention of communication between portions of the sexual organs essential to reproduction; and, in proportion to its causation, inflicts lasting injury upon them, or endangers the life or effects the death of the woman.

Physiology.—The peritoneum is a membrane composed on its internal aspect of flattened endothelial cells lying on a layer of connective tissue carrying blood-vessels, with, in the intestines, a substratum of muscular tissue with its vessels and nerves, and lining mucous membrane.

Its function is to secrete such an amount of serum as enables the abdominal organs to move on each other without friction; and especially the intestines on each other, and on the abdominal wall through the additional medium of the omentum, which, under conditions of moderate inflammation, prevents their adhesion; and to absorb such quantity of serum as may be in excess, and such bland materials as may gain access therein, in which the great omentum has much power; and by exudation of fibrin to shut off and encyst acrid effusions, thus guarding the remainder of the membrane from such injury.

General Pathology.—In consequence of a slight degree of irritation to the peritoneum, the serum of inflammation transudes from the capillaries and veins, from diseased deterioration of their walls. It contains much more albumen, salts, and corpuscles than in the normal state, and coagulates on removal, and occasionally in the cavity.

The irritation being greater, inflammatory fibrin is exuded from the blood through the affected vessels, in which are a large number of leucocytes forming on the injured surface. In density it varies according to the greater or less proportion of serum with it.

If the exudation cells be in great excess, they may undergo fatty degeneration and be absorbed; if not, they form pus, which, when enclosed by outlying fibrinous connective tissue, is an abscess.

In certain more acute causes, particularly in the case of peritonitis from the exanthemata, and probably also when a sudden effusion into the peritoneum of a very large quantity of virulently offending material has occurred, the early absorption by the lymphatics may produce such a general sepsis that but little reparative exudation occurs, and but slight organisation of what sero-fibrin is present; thus death rapidly ensues, and before it on operation, or afterwards, there is found some easily separated cohesion of the intestines and of adjacent peritoneal layers by purulent fibrin, and in the depending cavities thin serum mixed with serous clots and thin pus.

Condition.—The peritoneum is most inflamed at the site of its causation, at a distance from which, if the local causation has not been too virulent, it shades into congestion or hyperæmia, and so to the normal.

In its milder form fibrin is rapidly exuded on the irritated peritoneal surface, so as to encapsule the site and causation of injury; and thus the opposing layers become thickened or adherent, or both, and particularly by a chronic repetition. If the inflammation be of the commonest kind, a mild, local, pelvic peritonitis is induced by one tubal effusion, the thickening is unilateral, and may affect the tube, the ovary or the uterus, or one or other, or all of these may be bound down on that side by the fibrin exuded. If it be of double causation, the exudation is bilateral, and is thus likely to extend posteriorly into Douglas' pouch in the form of a horse-shoe, and posteriorly is apt to convey the sensation of a wedge. A vigorous attack of this class of exudation induces a board-like feeling, in which the uterus is set and firmly fixed. These fibrinous exudations may be quite short, and closely attach adjacent parts together; or by movement, especially of the intestines, they may be so stretched as to form violin-like strings of great strength and tenuity to the length of eleven or twelve inches. The possible influence on the intestines of such a band is apparent.

It occasionally happens that there is a sense of fluctuation in such dense fibrin, which is found to be serum.

In the somewhat more severe causations the material exuded by the peritoneum, by excess of leucocytes and microbic action, tends towards pus, which in pelvic inflammation may depress the vaginal roof, and especially Douglas' pouch; and at the edges of the fluctuation is the dense fibrinous organised exudation. There may be more than one or several such collections imperfectly or effectually barred from each other by fibrinous partitions or adhesions, containing exudations of varying characteristics, one or more perhaps tainted with fæces; of these one may depress the vaginal roof, and not communicate with others.

A virulent cause induces the exudation of a thin seropurulent fluid with semi-organised fibrinous flakes, perhaps fæcal-tainted; and at a distance cohesive fibrin ineffectually endeavours to encapsule the severe and extensive baneful effusion and resulting exudation. This fluid collects in the more depending parts, and the adjacent layers of peritoneum tend to cohere by fibrin-pus, as between the intestines and other abdominal organs, there being no strong fibrinous bands, by the septic nature of the causation.

Cause.—The cause is always mechanical from the passage into the peritoneal cavity of morbid or foreign bodies, whether gaseous, fluid, or solid, in one or more of the following manners:—

1. By effusion from the fimbrial extremity of the Fallopian tubes induced by—

A. Atresia of the uterus or vagina, which is
(*a*) Virginal; (*b*) parous; or (*c*) operative.
B. Septic inflammation, which is
(*a*) Puerperal; (*b*) gonorrhœal; or (*c*) tubercular.
C. Tubal obstruction, which is
(*a*) Virginal; or (*b*) parous.

2. By rupture of—

A. The tubes, which may be from

(*a*) Hydro- or pyo-salpinx; (*b*) extra-uterine fœtation; or (*c*) tuberculosis.

B. The ovary, as of

(*a*) Graafian follicles; (*b*) follicular cysts; (*c*) papillomatous cysts; (*d*) ovarian dermoid tumours; (*e*) progressive ovarian tumours with or without twisted pedicle; (*f*) parovarian cysts; (*g*) abscesses, whether puerperal, gonorrhœal, or tubercular.

C. The uterus, which is puerperal, or of

D. Free abdominal tumours, as extra-uterine fœtation, hydatids, or cancer.

3. By pressure on an internal part, producing

(*a*) Necrosis, as of a tumour in labour; or (*b*) obstruction, as by bands.

4. By operative measures,

(*a*) Admitting septic germs; (*b*) producing outpouring of fluids into the peritoneal cavity; and (*c*) inducing necrosis of a tumour or fluid within the cavity.

Mode of Causation.—1. A. (*a*) Effusion into the peritoneum from the fimbrial extremity of the Fallopian tube occurs by atresia in the virginal state, when, by deficiency of development, the lower opening of the uterus or a patent vagina has not been formed, and the catamenial discharges collect in the superior cavities, as the uterus and the tubes, and distension of the latter with backward escape presently results. The secretion, with absorption of the watery parts in the intervals between the catamenial epochs, is aseptic, since it has not been in contact, direct or indirect, with the atmosphere, and on fimbrial escape in small quantity might create a peritoneal irritation of a mild character, and be encapsuled by fibrin; but the pressure is considerably increased by and at the time of the catamenia, which is of some considerable quantity; and, as the resistance of the tubes has reached its limit, a like quantity continuously flows into the peritoneal cavity; but it is the treacly fluid, from which the serum has been absorbed, and in which the fibrin has been altered and the blood cells have degenerated, so that it has ceased to be vital, and which previously dilated the tubes, which mainly escapes, and extends itself over a considerable surface, so that a vigorous peritonitis results. When this occurs in an operation to cure such atresia, it may be from pressure of the atmosphere if the patient be placed in Sims' position; by muscular efforts of the patient under the influence of the anæsthetic; or by pressure used to express the collected fluid. Moreover, it is liable to become rapidly septic from the passages being subsequently in direct communication with the atmosphere.

(*b*) In the parous, the closure may take place by cicatricial contraction after injury in labour of the lower part of the cervix or of the upper part of the vagina, and thus the vagina may become hour-glass in form, or bell-shaped. It is probable that a deficiency of development existed before the pregnancy, and that the condition resulted in an increased contraction. It is very rare.

(*c*) By operation; it is not difficult after paring the cervical surfaces all round for a lacerated hyperplastic granular face, and bringing up the lips accurately by sutures, that they should cohere so intimately and completely that the opening is left of small size; and that contraction should subsequently continue, rather than epithelium grow over the surfaces of the canal from the cervico-vaginal edge. Should effusion into the peritoneum take place by backward distension of the tubes shortly after the operation through such tightness of the sutures, and the tubes have been previously affected, the fluid is of such inflammatory or mucous secretion as the tubes may have contained, mixed with blood from the site of the operation, and the latter may have been rendered septic by the former. The peritonitis may thus be virulent.

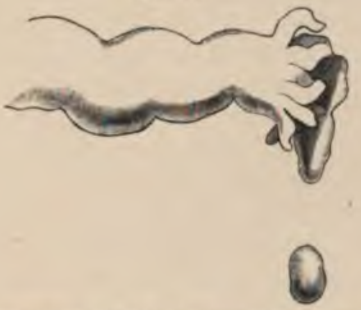
At a later date, when the contraction has gradually become complete, the fluid may be catamenial, and of the same character and produce the same effect as in virginal atresia, and need not be septic.

A practical atresia is also produced by the introduction through the cervical canal of tangle or sponge tents. The latter are usually septic or become so by vaginal contact, and in a few hours may raise the temperature to 105°; the retained fluid, usually sanguineo-purulent, may collect in the tubes and effuse through the distal extremities, producing a peritonitis of a virulent character, but, in its extent of surface, proportionate to the quantity thus poured out.

B. (*a*) By septic inflammation in the puerperal state; if pieces of placenta or membranes, adherent or retained, or clots remain in the cavity of the uterus and decompose, the mucous membrane throughout the tube may be thus infected, and at the fimbriæ taint the adjacent peritoneum, producing puerperal peritonitis.

(*b*) Gonorrhœa, having attacked the tubes, causes a discharge from the whole of the lining membrane, and consequently up to the junction of the mucous with the peritoneal membrane at the fimbriæ; the latter must, therefore, be somewhat affected, and such an inflammation is caused by this contact and effusion, as generally induces in the early stage an exudation of fibrin, which binds down the fimbriæ, and shuts off the lumen of the tube from the peritoneal cavity; thus the pus, presently formed in the tube, cannot enter the peritoneum. This, however, does not always occur; for should the gonorrhœal taint destroy the vitality of this early exuded fibrin, or the quantity effused have been so large or so virulent as to prevent it from forming adhesions, the fimbriæ are not closed, and the gonorrhœal pus may drip from the fimbrial extremity into the peritoneal cavity, and produce a peritonitis of intense virulence, in which is no further tendency to local fibrinous cohesion, but to an exudation of thin pus with flaky fibrinous clots, incapable of organisation.

FIG. 77.



Gonorrhœal pus dripping into the peritoneal cavity from the fimbriæ of the tube.

This cause acts the more readily when some obstruction, by puffing of the lining membrane or some stenosis at the uterine end of the tube, hinders the flow into the uterus.

(*c*) In tuberculosis of the tube, the tainted secretion on the distal side is barred from escape into the uterus, and overflows by distension into the peritoneum. The exuded fibrin is affected by the tuberculous taint and is of a low type, so that the bands of connective tissue formed may undergo a degeneration of the same nature, and be an infecting cause at more distant situations.

C. But far the most frequent cause of peritonitis is by tubal obstruction, which is frequent both in the virginal and parous states.

(*a*) In the virgin, evolving through endometritis and tubal disease, with greater uterine than fimbrial closure, whether by inflammatory thickening, or accentuated by angularity by displacement of the tube or uterus, which is generally backwards, the accumulating fluid distends the tube, and presently extends to the fimbrial extremity, when there is a slight commencing overflow into the peritoneal cavity, producing an inflammatory action proportionate to the quantity and quality of the secretion thus effused. When the irritation of the effusion is insufficient to produce such an exudation of peritonitic fibrin as closes the fimbrial extremity, which however is frequent, such outflow may be recurrent, and induce slight temporary inflammations, the distal end of the tube remaining patent.

(*b*) In the parous, when such a condition, with or without fimbrial peritonitic closure, is existent and labour occurs, the pressure of the descending fœtal head, perhaps overcoming a distal adhesion, may induce such escape; and the bruising produced by the compression irritate, and thus farther congest and thicken the tube, increasing the stenosis towards the uterine end; thereby the fluid secretion is rendered more acrid, and, continuing to escape at the fimbrial extremity, produces a serious puerperal peritonitis. Protracted labour with tonic contraction and accumulation of muscular fibres in the upper uterine zone, involving closure of the uterine ends of the tubes, necessarily creates liability to fimbrial effusion and peritonitis, particularly in the presence of previously affected virginal tubes, which may be apparent by a rising temperature and distension a day or two after delivery.

In chronic parous tubal disease there has been a gradual thickening of the tube towards the uterine end, producing a stenosis; the fluid on the distal aspect has continued to form and thus to accumulate, until it overflows backwards into the peritoneum, effecting its irritation. This may induce only a multiplication of endothelial and connective tissue cells, and thus a thickening of the affected parts; more frequently fibrin is exuded, and the fimbriæ become more or less adherent, generally to the ovary, and the distal end of the tube is closed.

Another mode in this direction is by rupture of an extra-uterine tubal fœtation into the lumen of the tube towards the distal end, so that the liquor amnii and blood pass through it into the peritoneal cavity. The quantity thus received may be at first slight, but the flow may be continuous or recurrent. Again, the ovum may by such loss of nutrition and of the liquor amnii die, and subsequent effusion is thus tainted by the necrosis; or be septic, for the ovum has on the proximal side an open tract to the atmosphere through the vagina. The resulting irritation is proportionate to the quantity and quality of the fluid effused, and, if recurrent, the more acrid later effusion contaminates the previous blood-clot, and destroys the possible vitality of the earlier effusion, and the peritonitis becomes virulent, or of a low, septic, and fatal character.

2. Rupture is the next mode by which peritonitis is caused, and this is mild, extensive, or virulent by transudation of leucocytes and entrance of microbes, and these are frequently consecutive.

A. (*a*) *Of the tubes.*—In cases of hydro-salpinx there has been an original stenosis, temporary or permanent, of the uterine end of the tube to create the backward tension, and peritoneal effusion which has induced a peritonitic adhesion of the distal extremity for the retention of the fluid in the tube, else it would drain into the peritoneum. The pressure increasing, the walls of the tube become distended, and the tumour may attain to so large a size as to contain a pint or upwards; this, however, rarely occurs, a few ounces and less being the usual quantity. It rarely ruptures; but should it do so by separation of the agglutinated fimbrial extremity, or laterally by gradual stretching, and finally by sudden rupture of the wall, a moderate peritonitis ensues, since the fluid is thin, clear, and not acutely irritating. But if the contents be of an actively inflammatory nature, and form a pyo-salpinx, the connective tissue and endothelial cells of the stretching tube multiply, so that the membrane continues to cover the tumour. By the pressure of the increasing pus, the taint of which affects the capacity of healthy cell life, and by the inflammatory influence, the tension exceeds this cell growth, and the mucous, muscular, connective, and endothelial cells become separated. From the engorged and inflamed capillaries and minute veins leucocytes and fibrin transude, and the adjacent surfaces of peritoneum become adherent. The pressure of the increasing pus continuing to separate the tissues of the wall of the tube, and the peritoneal surfaces being now coherent, the pus forces its way in a similar manner through the farther peritoneal layer and its underlying tissues, and so makes its way into a viscus or externally, whereby the pus may find an exit from the body. Should the pus-sac rupture by a sudden tear at some thin point of low vitality with absence or deficiency of inflammatory peritonitic cohesion, and particularly from some external blow or internal straining or pressure, as possibly the passage downwards of a large stool or the injection of a large quantity of fluid, which alters the relations of the new and feebly attached peritoneal surfaces, the pus may find its way at once suddenly into the peritoneal cavity, when the inflammation will be immediate, but proportionate to the quantity and acerbity of the effused fluid; markedly most virulent, should the pus be of gonorrhœal contamination; but in any such case the peritonitis is sudden and violent.

(*b*) In a tubal extra-uterine fœtation the ovum enlarges so as to separate the fibres of the circular muscular layer and connective tissue, and to distend the peritoneum, while the chorionic villi are intimately attached to the inner wall. By the rapid growth of the ovum, laceration, by distending separation of the tissues of the wall of the tube and of the villi, may shortly occur, so that blood is effused into the peritoneal cavity. The quantity may at first be small, and the cohering organising clots form a layer, and create an irritation which induces fibrinous exudation, which endeavours to encapsule the rent. Should presently a secondary rupture ensue through the same channel, the second flow disturbs the progress of cohesion, absorption, and vitality of the first, an influence much increased if distension of the intestines with transudation of fæcal taint infecting the effused matter occur. Generally a large rent with ragged edges results early or late in the wall of the tube and of the ovum, which, being deficiently nourished and surrounded by blood-clots, seldom maintains vitality; but, perhaps also becoming septic by connection with the atmosphere through the proximal end of the tube, the uterus and the vagina, usually, in part at least, dies, and its discharges pass into the clots, and may be guarded from the remainder of the peritoneal cavity only by them, or the feebly-organised fibrin-sac, which thus becomes infected and may break down, the peritonitis during the process becoming general and virulent, or typhoidal.

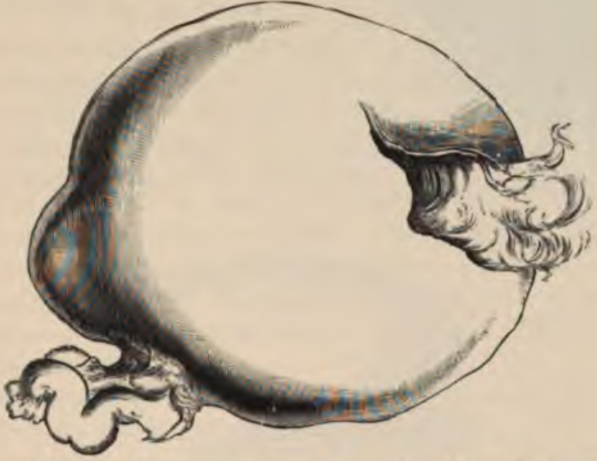
(*c*) A softening tubercular tube does not act quite in the same manner. The earliest rupture produces in the debilitated system an exudation of fibrin of a deficient vitality, and the walls of the sac breaking down before the increasing pressure, tubercular particles or particles of tubercularised fibrin find their way into the peritoneal cavity, so that the disease is disseminated over the membrane, producing in development a low form of inflammation with exudation of serum, the latter from compression of the venous radicles by multiplication of tubercular cells about them, and perhaps finally of pus, particularly after a septic tapping.

B. (*a*) In the ovaries the rupture of Graafian follicles, of which the external coat has become thickened by a previous peritonitis caused by tubal effusion, is common. The tension, ordinarily sufficient for the rupture of such follicles, is now inadequate. Nature, endeavouring to effect her object, increases the quantity of contained fluid, and the ruptured arterioles accentuate the tension; so that, if presently rupture occur, the quantity of fluid passed into the cavity of the abdomen may be from half a drachm to half an ounce or more, which in itself probably does little more than create a slight ephemeral inflammatory attack. But it may happen that a sac of considerable size may be filled with blood-clot, perhaps in laminæ from successive hæmorrhages, and that the capsule of the ovary is so dense that, if rupture at last take place, a rent occurs in the form of a lid; and the ovary being much congested, and the further secretions from the base of the follicle passing into the abdominal cavity, a continuous irritating effusion is present, which may cause such a peritonitis as raises the temperature to 104° or 105°, of which the character may be general, and ultimately virulent.

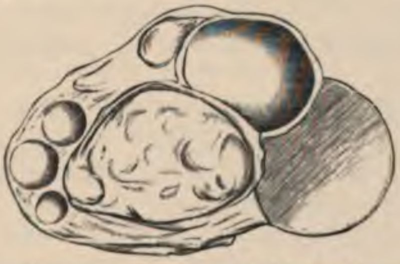
(*b*) (*c*) *Follicular cysts.*—Or such an ovary may be non-adherent, its walls being thickened by an effusion which did not produce such an irritation as to induce the exudation of fibrin, or only in so small a quantity as to be insufficient to effect adhesion, and follicular cysts similarly result, and the lining cells continue to secrete; or papillomatous cells, emanating from the parovarium, may develop on the inner wall and rapidly secrete fluid, whereby the tension is much increased, and the stretching of the walls may be so extreme that at some more prominent point rupture takes place, and the effusion may be extensive. The fluid may be clear, pale green, or straw-coloured, and in itself be capable of being readily absorbed; but the sac wall may be large, exceedingly thin, and apparently without vessels from previous compression, and incapable of continued vitality, except through the medium of vessels formed in the new connective-tissue adhesions. Should it necrose, the exudation becomes thereby affected, and the peritonitis is progressive, low, and typhoidal.

(*d*) By external force an internal organ or structure may be ruptured, and the peritonitis is proportionate to the quantity and quality of the effused fluid, whether blood, urine, fæces, or pathological product, as the fluid of a hydatid, progressive ovarian, ovarian dermoid, or other cyst. Any of these, except fæces, which are virulently septic, but may be temporarily encysted if in moderate quantity, may be absorbed or encysted; but if the quantity be excessive, or the absorbing vitalising processes be checked by a fresh or continuous flow, the peritoneal irritation thus produced is likely to induce a retrograde action, and cause a peritoneal exudation of low character, infecting the

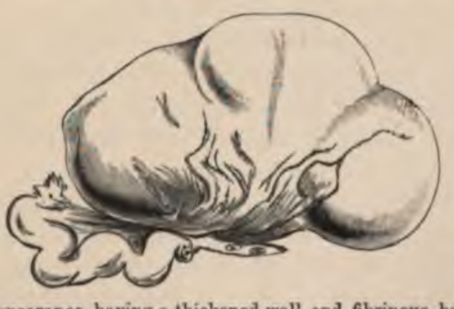
FIG. 78.



Dermoid tumour of the ovary, showing protruding hair and fat. The Fallopian tube is narrowed by pressure near the uterine end, and the outer part is slightly distended and convoluted.



Section of the other ovary, showing a central dermoid tumour, and follicular cysts around it.

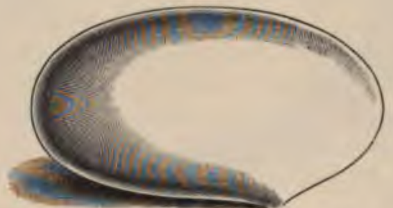


External appearance, having a thickened wall and fibrinous bands on the ovary and about the fimbriæ, closing the opening and limiting the movement of the tube.

blood-clots and other effusion, as well as the lacerated cyst-wall, and destroying their vitality.

The effusion from a ruptured dermoid, whether by external force or in parturition, is of a serious nature, since the contents are fat, which may be fluid or solid, matted hair, and frequently bones. The opening is liable to be temporarily plugged by the contents, and especially by the hair, so that irritating effusion of disorganising material is intermittently continuous. The pointed extremities of bones are similarly liable to perforate the sac. The peritonitis is apt to be low, but progressive, and ultimately typhoidal.

FIG. 79.



Small dermoid ovarian tumour with sharp internal bony projection.

Should such a dermoid suppurate and rupture by force, the contents are virulently irritating, and the sac, of which the lining membrane is pyogenic, is incapable of recovery. If the rupture be by gradual distension, the action of peritonitic adhesion is similar to that in pyo-salpinx.

(*e*) (*f*) In the case of progressive ovarian or parovarian tumours ruptured by accident, a small quantity of blood and ovarian or parovarian fluid may be absorbed; but a large quantity beyond the capacity of absorption irritates the endothelial cells, engorges the lymphatics as well as the vessels, influences the nerve ganglia, and peristalsis is affected. Necrosis of the ruptured wall presently ensues, and, the whole effusion becoming infected, a low virulent peritonitis results.

Effusion into the peritoneal cavity from the veins on or near the peritoneal surface of an ovarian tumour, of which the pedicle is twisted, which is also liable to be produced in labour, particularly of a small tumour, is proportionate to the degree of vitality of the tumour, which is determined by the relative compression of the arteries and veins in the twist of the pedicle. If the tumour retain something of life, there is a diminished circulation through the arteries, and a more limited return of blood through the veins, with perhaps their rupture within the tumour; the tumour becomes moderately engorged, œdematous, and enlarged; some serum by venous obstruction in the tumour is effused, presently perhaps to be absorbed; and it may be that the distension of the peritoneal surface of the tumour may create endothelial irritation, inducing an exudation of fibrin, which encapsules the tumour, through which a new circulation, external to the tumour, is established by cohesion, and thus the circulation of the tumour is presently continued and equalised, but moderated.

A moderate peritonitis occurs, where the arteries as well as the veins are compressed by a sudden complete twist, so that engorgement at once ceases; the tumour and its peritoneal coat are suddenly dead, and acting as a foreign body irritate the adjacent peritoneum which exudes vital fibrin, which encases the tumour, and shuts it off from further peritoneal action, perhaps permitting a slow retrograde metamorphosis by a feeble nutrition of the exterior of the tumour.

But the most common form is when the twist compresses the veins, but permits a considerable circulation in the arteries, whereby the walls become purple with engorgement, violent and sudden; there is rupture of veins within the sac, intense distension and separation of its peritoneal endothelial cells and of underlying structures, and effusion of irritating secretion take place, and there is an immediate and most active general peritonitis.

(*g*) Rupture into the peritoneum of an abscess of the ovary proceeds in the same manner as a pyo-salpinx. In the tuberculous state it has the characteristics of the tuberculous tube; or, if gonorrhœal, the pus is particularly acrid and virulent.

C. Rupture of the uterus is puerperal, and may be of the body or of the cervix.

Of the body the effusion is of blood and liquor amnii, and it may be that the child, or part of it, and the placenta escape into the cavity.

Of the cervix, the laceration may be through Douglas' pouch when the effusion is generally of blood only, which, if limited in quantity and not becoming septic, and having ready escape downwards into the vagina, is much less serious, and may create only anxiety, the wound completely healing.

D. In extra-uterine fœtation, at the site of attachment of the ovum to the peritoneum, the chorionic villi extend into the endothelial cells and connective tissue and separate them, producing an irritation which effects an exudation of fibrin which forms an adhesion between the ovum and the peritoneum, the villi coalescing with the vessels of the deeper structures. On the formation of the placenta at this site the remaining villi atrophy, but the placental attachment is stronger, the rest ot the ovum increasing on the free peritoneal aspect, with new growth of endothelial and connective tissue cells. Should the original adhesion of such a sac to a fixed point or points be unduly extensive, the continuing growth and distension may cause its internal rupture; and similarly, if it be submitted to undue pressure or external force. In such rupture the laceration may be through the circulatory parts, so as to separate chorionic villi or placental structure, when hæmorrhage may take place into the cavity of the ovum, and thus destroy its vitality; and the subsequent peritonitis is liable to be such as results from an ovarian tumour with twisted pedicle, vein obstruction, and rupture; or, the hæmorrhage continuing, the ovum may rupture into the peritoneal cavity, or the original tear may permit the direct effusion of blood thereinto, when the peritonitic effect is, as in cases of tubal extra-uterine fœtation, under similar conditions.

The peritonitis of malignant disease is by gradual extension of the cancerous inflammatory zone to the peritoneal layer, which exudes serum by capillary and venous transudation, or fibrin by inflammatory irritation of the endothelial layer; but the cancerous taint quickly affects the peritoneal cells, which become thereupon part of the malignant tumour, and proliferate in this diseased form, pouring out a limited serum by vascular tension. Should an active peritonitis supervene, it is frequently from rupture of vessels into the abdominal cavity, when the continuously escaping blood, though perhaps small in quantity, acting as a foreign body, produces the irritation, which, however, may subside if the quantity of effused blood be small and it become encapsuled by fibrin not yet markedly affected by the cancerous taint, though presently to be so.

3. (*a*) By pressure on an internal part producing necrosis, as of a tumour in labour, a not infrequent condition is the presence of an ovarian dermoid, or cystic tumour, or less frequently a myoma, of perhaps moderate size, occupying the pelvis or lower abdomen with pregnancy. Should the child attain to considerable size in proportion to the size and situation of the tumour, and the latter obstruct the passage of the former in labour, an excessive pressure may be exerted on the tumour for such a time as to stop its venous return, whereby its size is increased. The pressure may cause the rupture of the cyst, or so bruise it or a myoma, that necrosis of a part or of the whole tumour results. Should rupture ensue, the conditions are the same as in the rupture of a tumour by other force external to it; but in the present case there is added the existence of the puerperal state, and the increased liability to inflammatory action. Thus there is the escape into the peritoneum of the contents of the tumour, which, in the case of a dermoid with its fatty matter, hair and bones mixed with extravasated blood, is probably necessarily fatal unless removed; and also the probable necrosis of the walls by the bruising, and the ragged, probably large, rent by the violence of the rupture, and the peritonitis is liable to be progressive and fatal.

A sub-peritoneal myoma compressed in labour may be in part torn from its attachment, and so hæmorrhage and probable necrosis; or such pressure and bruising of an interstitial or sub-peritoneal myoma as causes internal extravasation and peritoneal hæmorrhage by vascular rupture, that its complete or partial death may ensue; and, in the latter case, perhaps a gradual breaking down, fatty degeneration, and suppuration in its centre, in each case producing a peritonitis proportionate to the cause.

(*b*) By obstruction by bands, peritonitis is not rarely induced through the medium of pressure on, and obstruction of, the intestines. The serum of fibrin exuded in a previous peritonitis from a moderate causation is gradually absorbed, and connective tissue cells are formed, uniting adjacent peritoneal surfaces, and the structures which they cover, and thus the intestines, which may be occupying positions much removed from the normal, particularly in operations in which they have been displaced. During the inflammation there is distension of the intestines, but, except for this, practically complete immobility in the localities which they happen to occupy at the time. On recovery, the intestines attempt to alter their positions according to the size of their contents by peristaltic action. These movements commencing with convalescence, the absorption of serum and the peristaltic action in the passage of fæces stretch the solidifying fibrin, and thus the final length of the bands is frequently accommodated to the need of the intestines. But in this process long strings, to the length of a foot, may have been formed, which may constrict other coils of intestines than those to which they are attached, and under the influence of collection of gas or fæces above them prevent their passage, and thence obstruction and peritonitis. It is not rare that, after abdominal section and the removal of very adherent tumours, such bands form in the healing, leading to constipation, abdominal distension, dyspepsia, obstruction, inflammation above the band, and finally to peritonitis, which may be fatal unless the band be removed.

4. (*a*) Of operative causation, after the opening of the abdominal cavity, the admission to the general peritoneum of septic foreign bodies, as atmospheric air contaminated by septic gases, whether from external influences or from the patient in whom they were previously encysted, of septic fluids, as impure water, or pus, fæcal or irritating fluid from the patient, of solid matter, as a septic sponge, or such-like, forms a septic causation, and is liable to induce immediate inflammation of a virulent character.

The moisture from the aseptic stump of a removed tumour produces a slight irritation, effecting an exudation of fibrin, which encapsules the cut surface, and by its means attaches it to an adjacent layer; and in this exudation new vessels form, and its nutrition is to this extent continued. At the site of the indentation of the aseptic ligature, the proximal and distal peritoneal surfaces touch; fibrin on the proximal side is exuded by local irritation of the ligature, and adhesion of the adjacent surfaces takes place, and nutrition of the distal structure is again effected. Should the ligature be septic, an irritative peritonitis occurs, and the exudation, if the cause be moderately septic, encapsules it, and it may be finally absorbs it; or, if more septic, pus cells form and soak the ligature, which thus remains as an irritating foreign body, until it ultimately escapes from the body; or a general and virulent inflammation may ensue.

(*b*) As producing outpouring of fluids into the peritoneal cavity, the use and effects of intra-uterine stems have already been referred to.

The introduction of a trochar through the two layers of non-adherent peritoneum into a fluid-containing cavity usually permits the escape of some of the fluid, as well as of blood moderate in quantity or excessive or continuous, whether salpingitic, ovarian, myomatous, or of extra-uterine fœtation. The escape of progressive ovarian fluid is apt to be proportionate in quantity to the size of the trochar in relation to the density of the fluid, and fibrinous adhesions extensive in proportion to the quantity and quality of the outflowing fluid result; if the quantity be too great for continued vitality, the peritonitis is gradual, and finally, by secondary subsequent escape and infection from the degenerating sac, low and progressive. In the myomatous tumour it is of blood, or also of myomato-cystic fluid, whether serous, fatty, or purulent, the quantity and quality of which determines the degree of the peritonitis in the same manner. In the extra-uterine fœtation there is apt to be a flow of blood after the evacuation of the liquor amnii, and a clot remains perhaps dangling from the aperture into the peritoneal cavity, which the resulting necrosis of the ovum contaminates, and the peritonitis is gradual and presently virulent.

When a trochar, of whatever size, whether large or small, is introduced from the abdominal surface, or through the vagina into an ovarian dermoid tumour, the fat or hair at once blocks the lumen of the tube, but the opening remains for drainage of fat, or, in the case of a suppurating dermoid, of a mixture of pus and fat and hair, perhaps to be followed by bony growths, into the peritoneum; or into a multiple hydatid, to be similarly blocked, and similarly drain fluid of an uncertain vitality; or even into a follicular cyst with walls distended by blood-clot in a degenerating state. It is utterly unjustifiable, unless peritonitis of an uncertain virulence be desirable.

Some injuries of the peritoneum are effected criminally by ignorant persons with the object of producing abortion, in which a sound, or other sharp instrument, pierces the uterine walls. The peritonitis may result from septic matter adhering to the instrument, or, emanating from the necrosing ovum and subsequently following the track made, it may infect first the clot, probably hanging into the cavity, and then the muscular and peritoneal layers.

(*c*) Necrosis may be induced by the introduction of a pointed instrument into, and the escape of the liquor amnii from, an extra-uterine fœtation; and the inflammation is produced by the fluid escaping into the peritoneal cavity, being presently contaminated by the adjacent necrosing tumour. A low peritonitis first occurs with gradual progression into a more severe form, and death is liable to result unless the tumour be removed at a sufficiently early date.

The same may happen from the tapping of a small, thin-walled, unilocular ovarian cyst, in which nutrition of the sac is not maintained by efficient vascular connective-tissue adhesions.

Pathological Evolution.—When effusion from the fimbrial extremity of the Fallopian tube into the peritoneal cavity is small in quantity, and very slightly irritating in quality, as when escape of an almost normal secretion into the uterus is in some way temporarily obstructed, a limited degree of irritation of the peritoneum is created. In the moderate degree now suggested there is an increased formation of endothelial cells and some hyperplasia of connective tissue, and it may be a slight fibrinous exudation on the surface, but without enough to effect adhesion of adjacent peritoneal surfaces. The endothelial and connective tissue cells of the peritoneum are thus thickened, and particularly on the surface of the ovary, in the immediate neighbourhood of which the effusion has occurred. The more fluid part of the effusion and of the exuded fibrin being presently absorbed, the external wall of the ovary is rendered unduly resistant. The fimbriæ of the tube are similarly affected and lose their sensibility and mobility, so that they less readily apply themselves to the maturing follicles. From these combined effects of such a mild peritonitis, the perhaps unduly irritating contents of a subsequently rupturing Graafian follicle tend to fall into the peritoneal cavity, and produce secondary, possibly mild and recurrent, peritonitic attacks, which lead on to adhesive results.

Should the fluid which has escaped from the fimbrial extremity have been of a somewhat more irritating quality, or larger in quantity, the exudation of fibrin is greater in quantity, and cohesion by connective tissue of adjacent peritoneal surfaces thus affected results, with some thickening beyond the adherent zone. Such escape is usually from one tube in the first instance, but later the other may be similarly affected. Or such peritonitis may be subsequent to an attack of the non-cohesive type, and the hyper-vigorous Graafian follicle may discharge its contents into the peritoneum with this result. The situation of such an effusion is generally latero-posterior, for the offending tubal extremity or ovary has, by the weight of its distension previous to effusion, descended in the pelvic cavity as low as its attachments permit, and the escaped secretion has also fallen into the depending cavity; but it may be that a previous mild attack has, by thickening the membrane and consequent loss of elasticity, maintained the site of causation in an anterior position, so that the exudation is also anterior.

Cohesive fibrin being now exuded and the fluid part absorbed, the fimbriæ become adherent to the adjacent peritoneum, and the distal orifice of the tube is closed, whereby on the one hand farther retrograde escape of tubal secretion is prevented, and thus a similar recurrence is guarded against by Nature's mode of repair, and on the other it is in future incapable of receiving the ova from the rupturing Graafian follicles. The functions as a tube of communication, as for the passage of the semen from the uterus to the ovum, and of the ovum to the uterus, have ended for ever.

The ovary has been to some extent similarly affected; it may be that it also is bound down by adhesions, and such is usually to some extent the case; but certainly its wall is rendered unduly dense, and in future the Graafian follicles rupture only under abnormal internal pressure, and frequently do not succeed in rupturing at all, and follicular cysts result. Should the internal pressure be able to effect its rupture, and the fimbriæ be capable of applying themselves and of receiving the contents, a slight peritoneal irritation from excessive follicular congestion only occurs; if the fimbriæ are elsewhere adherent and closed, the contents of the follicle escape under undue pressure into the peritoneal cavity; and if a previous peritonitis have not encapsuled the follicle, the escaping irritating follicular contents produce a peritonitis proportionate to the quality, quantity, and continuance of flow. When such a Graafian follicle becomes distended, a painful congestion of its peritoneum occurs; when it ruptures into a peritoneal space enclosed by adhesions, a peritonitic distension by irritated follicular contents with exuded serum ensues, which is usually presently and slowly absorbed, but may continue for months or years; similar conditions recurring periodically, the outlying structures become denser by further exudation of plastic fibrin, congested, and with the tendency to further exudation of serum into this cavity, and there is not a tendency at first to absorption, the current being from without inwards, instead of from within outwards. An encapsuled serous exudation, probably if non-adherent in Douglas' pouch as the most dependent part, has been created, and there is pain from tension.

But the healthy fimbriæ of the opposite tube may be attracted to the maturing irritated follicle of the affected ovary by the final rupture and resulting peritonitic fibrinous exudation in which it may be implicated, and thus become adherent on its wrong side; its own ovary thus becomes affected, discharging the contents of its Graafian follicles into the peritoneal cavity. Such follicular secretion, no doubt, need not be irritating; but the inflammatory action of the opposite side, or the occurrence of its own peritoneal exudation presently affects it, so that it gradually or suddenly passes through the stages before described.

Frequently, and usually when the cause is gonorrhœal, both tubes and ovaries are thus similarly affected.

The condition now arrived at is very serious, and permanent sterility results. Both fimbriæ are adherent, and the distal openings obstructed. Both ovaries have their external walls thickened, and are more or less embedded in connective tissue, and the Graafian follicles rupture only under excessive distension, whereby the contents are rendered of an irritating quality and excessive quantity, and, if rupture occur, recurrent peritonitis ensues.

The effects on the uterus are that the tumour produced by the distension of the tube, prior to the escape of the effusion from the fimbrial extremity into the peritoneum, pushes the body of the uterus over to the opposite side, so that it is lateroverted. This position is rarely exact, for the tube may expand posteriorly, when the uterus is antero-lateral, or anteriorly to the transverse median line, and the uterus is thus deflected latero-posteriorly. In this respect the cause of the tubal affection has an important influence, for should a posterior or anterior misplacement of the uterus have caused an angularity of the previously thickened tube, its resulting distension alters the uterine displacement, which will thus be latero-posterior or latero-anterior. The fluid part of the effusion and of the exuded fibrin is now absorbed, and contraction in the formation of the connective-tissue adhesions occurs, whereby the uterus may be drawn over to the affected side and there tightly held. But this may be prevented by the continuance of the distension of the diseased tube or ovary, or both, and it may be bound down in the pushed-over position by the fibrinous adhesions about the affected tube and ovary. The uterus cannot be thus misplaced by pressure without evolutionary effects on the healthy tube, which thus is apt to be angled and therefore become similarly obstructed, and thus affects its ovary so that they both effuse secretions in a manner which produce similar recurrent peritonitis, exudations, and adhesions. This secondarily affected tube may tend to push the uterus from its side, when it may take the mean of the two lateral pressures and fall forwards; but far more frequently, from previously mentioned causationary influences, backwards. The secondarily affected tube may, and more usually does, unless early adherent, take a higher position in the pelvic cavity, and lie above the uterus on its own side, its normal level being occupied by the other enlarged tube. Rarely, by its having been originally displaced by the enlarged adherent opposite tube, or by its evolutionary excessive size and the previous adhesions of the uterus, it forces its way over to the side of the originally affected tube, fixing the uterus through the medium of its causationary peritonitis still more firmly in the position which it has come to occupy. The effusion of plastic fibrin in the neighbourhood of the rectum causes its adhesion to adjacent structures which in the evolution of disease may have come to lie next it. The most ready adhesion is to the fimbriæ, whence escaped the irritating effusion, and, by close apposition, to the ovary. The uterus, frequently dragged backwards by the tubal weight, and thus retroposed, perpendicular, retroverted, or retroflexed, also may become joined to it, and, absorption of serum ensuing, the fibrin contracts, and tends to still farther bend or flex the uterus backwards, and bind them tighter together. The pressure on the rectum thus permanently effected interferes with the descent of the fæces and gases, so that constipation and some distension of the intestines result, so that it is often found that the abdomen is enlarged and hyper-resonant. Should fibrinous bands be formed towards the left posterior surface, the pressure on the descending bowel is the greater; and this condition may be so accentuated that obstruction of the bowel may occur. On the right side the inflammation may extend as high as the vermiform appendix, which may thus become attached to the sexual appendages, or be thickened or embedded in the exuded fibrin, producing inflammatory action and dragging tension about the ilio-cæcal valve, or adhesion of the omentum and mesentery with partial constriction of small intestine.

In the case of exudation of serum into Douglas' pouch forming a serous sac walled off by exuded fibrin, the pressure on the rectum may be considerable, and its capillaries at the edges of the site of tension engorged, when leucocytes tainted with fæces may exude, infect the serum, and convert it into fæcal pus; so that, when the sac is opened, it may seem that the contents of the bowel have escaped.

It would seem surprising that the effects of peritonitis on the bladder are not generally more marked when it is remembered that it is in a constant state of variation in size and position; but it is this very variation during the state of the acuteness of the inflammation and deposition of fibrin, and so of the moulding of the parts to the movements of the bladder, which causes it to have space and elasticity for its expansion and contraction. Thus, even when the exuded contracted fibrin across the cavity of the pelvis is board-like, there may be no bladder irritation, unless from over-distension; the degree which is to be regarded as over-distension being determined by the limit of range which the bladder had created for itself when the exudation was plastic, which readily adapted itself to the recurrent pressure and retraction of the full and emptying bladder.

But while the bladder thus moulds exuded fibrin to the requirements of its varying dimensions, a greater irritation is often acquired by adhesion of a tube or ovary caused by a limited peritonitis from fimbrial effusion; and the action is through the medium of the uterus, when with absorption of serum retracted connective tissue has been formed. Should the uterus be anteflexed, the body lies on the bladder, which, as it fills, retroposes the uterus, causing a drag on the tubo-ovarian adhesion; thus, through the connective-tissue adhesions, there is a drag on four organs—the peritoneal surface of the tube, of the ovary, of the uterus, and, by its connection, of the bladder; whence reflex irritation and contraction of the bladder. By frequent inability of the bladder to expand without such reflex irritation, a persistent irritability of its muscular coat is effected, which may develop into a catarrhal state of the mucous membrane from frequent and, perhaps finally, clonic contraction of the muscular coat upon it.

Retroflexion of the uterus with peritonic adhesions usually creates less bladder irritation than the preceding, in spite of the drag on the superior cervical attachment, partly because of the gradual adaptation, and partly on account of the absence of the fundus from constant pressure on the body of the bladder. The uterus lies at rest posteriorly, and thus the appendages are not materially disturbed by the varying distension of the bladder. Extreme or even moderate distension may create desire and necessity of evacuation; but not that incessant requirement which is occasionally characteristic of the anteflexed or lateroverted uterus with latero-anterior adhesion of one or both appendages.

The cause of disease of one tube has usually affected the other; and even if this be not so, enlargement of the affected tube may have pushed the uterus over to the other side, which is apt to produce such an interference with the relation of the other tube to the uterus, that the former becomes angled, and its lumen obstructed; and it is subject to the same conditions as regards effusion from its fimbrial extremity. Even though the original peritonitis be of only one side, it may be that the effused material was sufficiently irritating to produce an extensive pelvic exudation; and if this be alternative, it is common that a fibrinous wall is formed across the pelvic cavity, and with the thickened peritoneal connective tissue, produces a solidity which is felt by the vagina as a dense horse-shoe wedge in Douglas' pouch, and laterally. This fibrin may fill all the adjacent peritoneal cavities, and, in its serous absorption and contraction, causes close cohesion of the pelvic organs.

This cohesion may, however, not be uniform, and the part of the pelvic cavity least liable to become coherent is the lower part of Douglas' pouch. And this for two reasons: the first is that the effusion is superior to it, and, when the quality is but moderately irritating, fibrin is exuded at the line of effusion; the second is that Douglas' pouch, being the most depending part, receives the mass of the effused fluid; and in the case of the induced peritonitis producing a congestive, serous exudation, this also collects there. A fluid mass is thus formed in this situation, walled off from the general peritoneal cavity by a dense fibrinous exudation; this fluid depresses the posterior vaginal roof, and, in the event of continued fimbrial effusion or of peritonitic exudation, the downward tension may be very great. When the tension has reached a climax, one of two things occurs: either the transudation of peritonitic serum ceases and absorption commences, and presently contraction, when Nature has effected the best cure she can; or, by the presence of a now virulent fimbrial effusion, it may evolve into the farther conditions of pus-degeneration of the effects of a virulent causation.

Thus we have so far seen that a moderately irritating local peritoneal effusion causes the exudation of serum and fibrin, so that the adjacent serous surfaces at the edges and limit of the effusion become adherent, and thus the causationary effusion is enclosed; with such alteration in the position and effect on adjacent viscera as their adhesion in malposition, and inability normally to perform their functions permit. In such cases also the vessels are engorged, and the nerves irritated and compressed. Similarly with the vessels and nerves of the underlying muscular layer of the intestines, so that their contraction produces local pain, and reflex sympathetic nerve-control causes cessation of such muscular contraction; consequently, the intestine is distended, and peristaltic action ceases. The causation being moderately acrid, and now enclosed by fibrin, the irritation ceases, and absorption by the local lymphatics occurs, so that the serum of the exuded fibrin and of the causationary effusion is absorbed, and the adjacent parts are closely adherent by newly-formed connective tissue, and the congestion of the vessels passes off; the healthy higher unaffected muscular intestinal fibres overcome the local temporary paralysis of the affected part, and peristalsis recurs. The parts have regained their original condition, except for the adhesions which have occurred and their evolutionary effects.

Fluids in themselves bland, and of the qualities of the fluid of the body, whether pure blood, liquor amnii, Graafian follicular, follicular cystic, progressive ovarian, parovarian, or papillomatous, need not necessarily produce more than a mild irritation. But they are foreign bodies, and when in quantity act as irritants of considerable power. By their quantity, increased by serum transuded by irritation, they press on adjacent endothelium, and impede normal movement of the intestines; absorption of the watery parts proceeds as rapidly as possible, but presently the lymphatics are engorged. Should the quantity be within such limits as can be dealt with by the lymphatics, the irritation presently ceases, and convalescence is determined.

But if the fluid be blood, its fibrin and the irritation it effects produce adhesions, and absorption proceeds. But in many of these causations, the sac, whence issued the effusive fluid, undergoes degeneration and necrosis; and, the outpouring continuing, the vitality of the first effusion is stopped, a greater irritation results, and the inflammation is virulent; and particularly in the case of blood, which is actively susceptible to sepsis.

In the case of a dangerous yet recoverable degree of effusion, the pathological action is similar, but much more acute and extensive; the exudation at the effusion site is, under the influence of leucocytes, presently of pus; at its outer zone, of cohering fibrin, enclosing the effusion. The further most important effect is the greater degree and extent of the intestinal paralysis of the muscular coat, so that the abdomen is distended, and the intestinal coils may be seen through the abdominal wall; or the latter, composed of inflamed peritoneum, engorged vessels compressing the nerves, and stretched and irritable muscles, may be brawny and hide them. The condition continuing, and the intestinal distension at the seat of irritation, now encapsuled, being complete, the leucocytes may acquire a fæcal taint and affect the exudation, and the resulting abscess sac have the odour of the intestinal canal, particularly in the neighbourhood of the rectum. While the intestinal distension continues, the vessels are engorged, and exudation by the endothelium into the effusion site takes place; and it is not until it is shut off by encompassing fibrin that absorption can occur. In the absence of fæcal taint, the causationary effusion with exudation, if not purulent, may be absorbed; after its occurrence this is not possible; but the abscess may discharge itself through the line of least resistance, and generally into the adjacent intestine, which discharge, except occasionally into the intestine, it is rarely able to effect unaided.

A virulent cause violently affects a large or the whole extent of surface of the peritoneum, and induces an exudation of flaky sero-fibrin, incapable of organisation, and sero-pus, and there is great distension from general intestinal muscular paralysis. This paralysis is not limited as in the former degrees, but affects the pelvic organs, the whole of the large and small intestines, and the stomach and liver; thus the stomach is compressed against the diaphragm, which ceases to act normally for the same reasons which induce relaxation of other intestinal muscular fibres, but which, under sympathetic irritation of the stomach, contracts in violent spasm, causing vomiting. The bile, presently increased in quantity by excitement of the liver from sudden compression by repeated diaphragmatic contraction in retching as well as by inflammation of the serous surface of the liver, is poured into the duodenum, and, unable to pass downward by the occupation of the lumen of the intestine by compressed gas, passes upward and further irritates the stomach, so that the vomit is yellow. These irritations persisting, the vomit becomes green, and finally black, like coffee-grounds, from gastric congestion, rupture of capillaries, and disorganisation of the effused blood by the gastric juices; and hiccough from spasmodic contraction of the diaphragm is frequent. These conditions continuing, there being no absorption of nourishment, the strength is presently worn out, and death ensues.

Symptoms.—From a mild cause the first physical sign is pain, usually sudden, over the site of the effusion, and it rapidly increases. With this is apt to be vomiting, but not necessarily. The bowels cease to act, the intestinal muscular fibres at the site relaxing; gas accumulates, and there is some distension in the neighbourhood of the site of effusion.

The rapidity of the pulse is variable, but it is apt to be about 100, and is much increased by exertion; the temperature is probably about 100°, but with rest it may quickly regain the normal. In these mild cases women frequently go about; though pain soon makes them rest, if not take to bed.

The seat of irritation being usually in the pelvis, the lower abdomen is tender on pressure, and somewhat distended and hyper-resonant.

On examination by the vagina, a thickening is felt at one or other side of the uterus, which is pushed over to the opposite side; or the thickening may be wedge-shaped in Douglas' pouch; or may extend in a horse-shoe form around the uterus, in which the cervix may be set, and fixed as if projecting through a hole in a board. A causationary condition of endometritis will also frequently be found.

An originally mild cause, as in the case of the simple rupture of a progressive ovarian cyst filling the abdomen with escaped fluid, may produce similar conditions; but the abdomen is dull from the presence of the tumour and the fluid. Should blood-vessels in such a sac or in an extra-uterine fœtation have ruptured, the blood-loss affects the pulse.

Hæmorrhage, as from rupture of an extra-uterine fœtation, or of a cystic tumour, as of a progressive ovarian tumour with blood-loss, forms in itself, primarily, a mild cause, and may produce little or no irritation; but secondary action is liable to occur, which may convert the condition into the virulent stage. The abdomen may be rendered tense by the quantity of the effusion, and the distension of the intestines by gas, induced by the peritonitic muscular relaxation; and it may thus feel brawny. The pulse is sympathetic with the quantity, if blood be lost; otherwise the pulse and temperature need not be raised; but the digestion and peristaltic action of the intestines being impaired, and the lymphatics of the peritoneum loaded by absorption of the effused fluid, the system suffers, sordes may be seen on the teeth, and the patient is low and depressed. On abdominal section no peritonitis may be present. Later, the ruptured ragged edges of the tumour, as of a ruptured ovarian cyst, or the whole tumour, as an extra-uterine fœtation, necrosing and the secondary effusions therefrom tainting the whole of the primary effusion, a low typhoidal condition results, or a violent peritonitis with high fluctuating temperatures when absorption of tainted matter is in process; in either case the abdomen is distended and brawny.

The symptoms of the severe and virulent causes vary less in degree than might be expected, and the line between the recoverable and the necessarily fatal is not defined. As examples of the severe, the effusion of a moderate quantity of gonorrhœal matter from the fimbrial extremity of the Fallopian tube may be cited; and as an extreme instance of the virulent, the sudden perforation by ulceration of the vermiform appendix with the immediate passing into the peritoneum of its contents, including fæcal gas, fæces, and pus, than which nothing is more irritating. In either and similar cases the pain at the moment of effusion is marked, and the site defined; there is great tenderness, and the abdomen is rapidly distended and brawny. There may or may not be vomiting; but little food is taken, and that only fluid; but, if much is drunk, it is presently vomited in quantity, for gastric as well as intestinal absorption and peristalsis are stopped. The pulse may be slow and normal, or running like a thread; the temperature normal, subnormal, or very high, or fluctuating; the conditions persisting, vomiting presently occurs and becomes persistent, or hiccough induced by spasm of the diaphragm may be frequent, loud, and painful; the temperature, if previously normal, suddenly rises and fluctuates; the pulse suddenly becomes rapid and assumes a wire-like tension; the abdominal distension, if possible, increases; sordes form, and the tongue is dark and leather-like; the vomit is like coffee-grounds, and the patient dies, frequently conscious to the last.

What is the cause of the difference in the symptoms as to the temperature and pulse in peritonitis with apparently equally virulent causations and conditions? I think it is one of two conditions. Let us take extreme cases.

In a case of sudden perforation of the stomach there is vomiting once or twice; the peritoneal cavity is suddenly filled with gastric contents, as milk-clots, bile, and gas; the peritoneum after twelve hours is a dusky red from engorgement; the pulse is threadlike and about 160; the temperature 97° to 99°; there is some serum exuded, and here and there are thin layers of fibrin, like sour milk, which is easily wiped off.

In another case there is a perforation of the vermiform appendix. The abdomen is brawny; there is no vomiting, but obstinate constipation; the pulse is about 72, and the temperature normal. On abdominal section, after five days, a large fæcal abscess is found over the vermiform appendix, which is gangrenous; and separated from it by fibrinous adhesions, another, of a different colour and consistence, in Douglas' pouch. Immediately after operation with thorough washing out and drainage, the pulse and temperature run up, and the patient rapidly sinks.

As a contrast, in a third case, a large adenoma of the ovary has ruptured, and the abdominal cavity is filled with blood and serous ovarian fluid; the abdomen is most tense; the temperature is normal, the pulse very thin and about 120, and sordes are on the teeth. On abdominal section there is no peritonitis, and recovery is immediate.

I think that the temperature depends on the absorption or non-absorption of an offensive effusion. In the third case the effused fluid is non-irritating in its early stage, and the peritoneum exerts itself to the utmost to absorb the foreign body, and the temperature is not affected, though the system is through the engorgement of the lymphatics, and malnutrition from the absorbents being extraordinarily active on the peritoneal, to the reduction of their action on the internal aspect of the intestines and stomach, of which there is muscular relaxation and some distension. Necrosis of the ruptured tumour is in progress, but has not yet infected the effused fluid and the peritoneum.

In the second case, there has been a primary slight rupture and some effusion of very virulent matter, at the outer zone of which fibrin has been rapidly exuded and has encysted it; its intensely irritating qualities have produced sudden and complete temporary paralysis of the adjacent ganglia with engorgement of the vessels and formation of pus at the effusion site, and there is no absorption and no rise in temperature. Later, the enclosing fibrin would become tainted with fæces, distal absorption occur, and pulse and temperature rise. After operation and reduction of tension, relief to the necessity of exudation occurs, absorption of fæcal-tainted exuded material may commence, and both pulse and temperature rise with a rapidly fatal termination.

In the first case the effusion is of so sudden, extensive, and virulent a kind that it at once permeates the whole peritoneal cavity, producing a general intense congestion and outpouring from the vessels, without possibility of absorption. The shock is intense and the solar plexus is paralysed, so that the heart rapidly flutters, and the vital functions are almost paralysed; but there being no absorption the temperature does not rise. The patient has been knocked down by an overwhelming force.

I think, therefore, that the varying states as between high and low temperatures and pulses, in different cases of virulent peritonitis, depend on the absorption or non-absorption of the effusion, as determined primarily by its large quantity and virulence effecting paralysis of the ganglia presiding over lymphatic absorption; and, secondarily, by its encapsulation, and the continued exudation from the peritoneum in consequence of the persistent virulence of the sac contents, which exceeds the capacity of absorption. In either case absorption of the virulent effusion does not occur, and the temperature and pulse need not rise, apart from the rise in pulse from intense nervous shock. When they do rise, which is usual in the less virulent degrees, absorption has occurred in the attempt of Nature to remove the foreign body; but the whole system may yet thus become tainted and overwhelmed.

Diagnosis.—The diagnosis is founded on the presence of tympanitic distension with pain and tenderness, greatly increased on pressure, which has been sudden in occurrence, and perhaps rapid in increase. In accordance with its causation, this may be local or general. The distension is indicative of the paralysis of the muscular fibres; the pain and tenderness of inflammatory pressure on the nerve filaments. Increased pulse and temperature, or a rapid pulse and normal temperature, accentuate the diagnosis; but, if they be normal, it is not contra-indicated.

In the pelvic causation or implication, a dense board-like sensation of greater or less extent is conveyed to the finger; and perhaps, subsequently, fluctuation may be found in Douglas' pouch from the presence of serum or pus.

The differential diagnosis is from colic, in which pain is usually relieved by pressure, the spasmodic peristaltic contractions may be seen, and the movements of the gas heard; and the pulse and temperature are normal.

From enteritis peritonitis is distinguished by the paralysis of the muscular fibres, as distinguished from the frequency of contraction in the former, as exhibited in diarrhœa which accompanies it; but should the latter presently complicate peritonitis, the intermittent muscular paralysis, distension, and absence of peristaltic action indicate its presence. But it is quite rare for diarrhœa to be present with peritonitis, unless on its relief and in the natural tendency towards health.

From tumours, by the sudden occurrence of the peritonitic symptoms, which may however be incident to an escape of fluid from a tumour; and this may thus occur as an addition to its own symptoms, and in aggravation of them, as in ovarian tumour suddenly twisting its pedicle.

Prognosis.—From a consideration of the aspects of peritonitis, previously detailed, it is evident that the expectation of the progress of a case is dependent on its cause, it being always remembered that the disease is a symptom; and it is therefore of the first importance that the mode in which the outpouring of foreign matter into the cavity has occurred should be realised; and on the knowledge thus gained must necessarily be founded the forecast of the result.

Assuming no knowledge of the state of a patient, the only certain guide is the degree and character of distension. If this be moderate and local, as of one or other iliac region, or of the lower part of the abdomen, it is to be expected that the effusion has been moderate in quantity and quality; that it is within the capacity of absorption or encapsulation; and thus that the danger to life is quite slight. Not so with regard to return to perfect health, which must be dependent on the treatment of the causational disease being effective; or it will advance in accordance with its progressive evolutionary pathology. But when the distension has rapidly become extensive, complete, and brawny, it is evident that the cause is virulent and most dangerous; many most severe cases recover; and others show no hopeful sign from the first. In such cases the diagnosis is all-important. If there have been a rupture of a considerable tumour, or the dripping from gonorrhœal tubes, the unaided progress of the case would probably be hopeless; while many cases of ruptured extra-uterine fœtation recover from the early conditions of peritonitis. They are all very dangerous, and the prognosis without operation must be most guarded and serious.

No distinct inference can be derived from a perfectly normal pulse and temperature occurring with great and brawny distension. It seems extraordinary, but they may be present with a quite hopeless cause; and, on the other hand, the most brawny of distended abdomina, with normal pulse and temperature, may recover without operation; but the expectation of the average is very much the reverse.

Great distension, with a normal temperature and a rapid wiry pulse, carries with it a particularly dangerous prognosis; and when sordes on the teeth are found in this state, the general expectation is almost hopeless. Perhaps rather less dangerous than the last condition is that of severe distension with high temperature and a fast pulse; but in either case the presence of frequent vomiting is apt to be a fatal sign. In the state of normal temperature and rapid pulse, the temperature usually rises with the pulse in the fatal stage.

It is necessary in all these considerations to allow for possible loss of blood internally from rupture of vessels, and the contingent influence on temperature and pulse; thus an extensive hæmorrhage is likely to lower the temperature, at any rate for some hours; and to increase the rapidity, and weaken the power of the pulse, and produce a drawn and anæmic appearance of the face; but both temperature and pulse may rearrange themselves after the cessation of the blood-loss; and the subsequent progress be dependent on or coincident with secondary taint, and the capacity of absorption in proportion to quantity and quality of effusion.

The influence of the twisting of the pedicle of a tumour previously unrecognised or unknown, which may occur in various degrees, is to be borne in mind; some of which, as far as life is concerned, are recoverable; while others are presently necrosed and hopeless.

Again, it is all-important to remember that a proper appreciation of the cause of the peritonitis is essential to a reliable prognosis.

CHAPTER XVII.

EVOLUTIONARY DISEASES OF THE OVARIES.

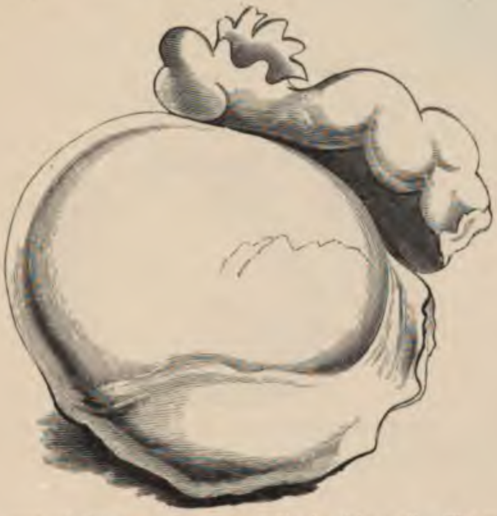
THE evolutionary diseases of the ovaries are increased density and thickening of the external wall; partial or complete adhesion by peritonitic fibrinous bands; follicular cysts, seldom exceeding the size of a walnut, which are unruptured Graafian follicles in ovaries in the above condition; papillomatous cysts evolutionary from the follicular; abscess of the ovary; ovarian or tubo-ovarian extra-uterine fœtation; and malignant disease, primary or secondary.

1. Of the ovary with thickened wall, adhesions, and follicular cysts.

Definition.—The wall of the ovary has been thickened, or its density increased, with or without adhesions, by some degree of peritonitis, commonly induced by effusion of irritating fluid from the Fallopian tubes into the peritoneum. The secretion of the Graafian follicle, which failed to rupture from the undue resistance of the wall, remains in the ovary. Several cysts thus formed may be present, and, compressing the ovarian stroma, produce its atrophy.

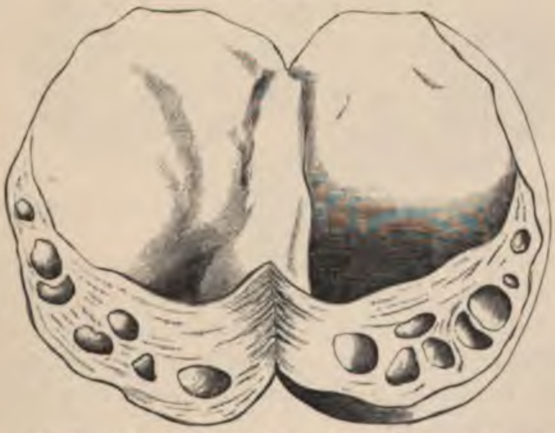
Condition.—The ovary is usually depressed and latero-posterior or posterior. The external coat is thicker or denser than is normal, and shreds and bands of adherent fibrin may be seen free on its surface, or may attach it to the tube and adjacent peritoneum. It may be enlarged by the presence of a main cyst, frequently of the size of a hazel or walnut, and occasionally containing a pint, with smaller ones. The wall of the larger cyst is usually very thin from distension, and there may be prominences where the tension is extreme and rupture is imminent. Usually, after a considerable lapse of time, the stroma becomes atrophic by persistent pressure of the cysts. The fresh-formed cysts generally contain red fluid and a blood-clot; or only a blood-clot, perhaps laminated. Later, if rupture do not occur, this is absorbed, and the fluid, passing

FIG. 80.



Follicular cyst of the ovary with exceedingly thin wall. The remainder of the wall is thickened. The fimbriæ are adherent, and the tube convoluted.

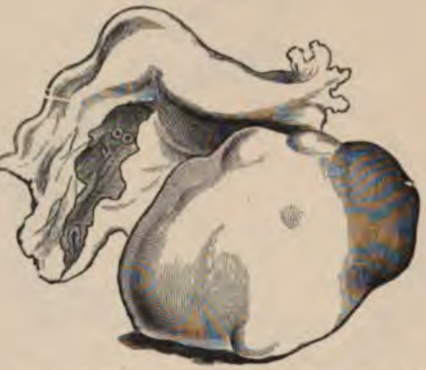
FIG. 81.



Section of fig. 80, showing large and small follicular cysts.

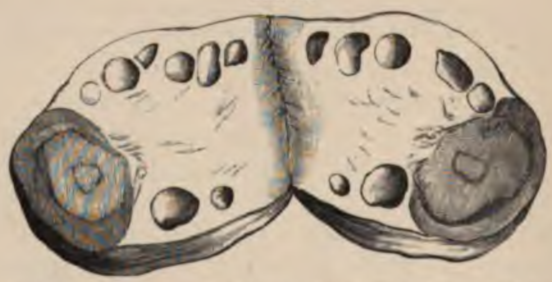
through greenish and various sherry tints, is clear. The ovary is periodically enlarged at the time of ovulation. Should rupture occur, the thickened wall may form a lid, which may by the pressure of undue local congestion stand open, not collapsing; or the sac may rupture. Cirrhosis ultimately supervenes.

FIG. 82.



The other ovary with follicular cysts. A Graafian follicle is distended into laminated clots. This wall is very thin, the rest thickened. The tube is adherent and somewhat convoluted.

FIG. 83.



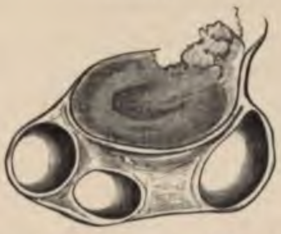
Section of fig. 82, showing a large follicle filled with blood-clot, and small follicular cysts.

Cause.—This condition is caused by peritonitis, which is commonly evolutionary from effusion into the peritoneum from obstructive tubal disease, the causes of which may be referred to under that heading.

Mode of Causation.—The tube effusing irritating fluid from its distal end, a degree of peritonitis is induced proportionate to its quantity and quality. The outer coat of the ovary is thus affected, an increased cell formation results, and in the healing in mild causation the wall remains thickened. In a greater irritation fibrin is exuded, which attaches the ovary to adjacent structures by bands. With a yet more extensive degree of peritonitis the ovary is everywhere closely adherent. The dense coat now impedes the rupture of the Graafian follicles in ovulation, and they do not burst under the ordinary tension. The ovary is thus, in the early stage of such disease and in vigorous sexual power, congested, and pours out into the follicular sac an increased quantity of blood, the excessive tension of which may effect rupture. Should it not do so the follicle remains as a cyst, perhaps at first containing a considerable clot, which stains the remainder of the fluid. Absorptive changes take place, so that the clot and colour presently disappear, a cyst of clear fluid persisting; and in some cases the cyst walls certainly have the power of farther fluid secretion, but rarely beyond the quantity of a pint, whereby the wall is distended to its utmost capacity. Other follicles follow the same course; but, a constant pressure being on the stroma, it atrophies, so that at a late period the ovary is found to consist usually of one large and a few small cysts, with some small quantity ol intervening stroma which may be cirrhotic.

Progressive Evolutionary Disease. — When such a follicle succeeds in rupturing, its contents, of undue quantity and perhaps containing a clot ot some size, escape into the peritoneum, where it produces an irritation which may be of considerable virulence. It is unlikely that it will be received by

FIG. 84.



Section of follicular ovary with thickened tunic; an enlarged Graafian follicle has ruptured with open door-like lid, so that blood-clot continuously discharged into the peritoneal cavity. The temperature gradually in five days rose to 105°, when cœliotomy was performed.

the tube, of which the fimbriæ are generally adherent elsewhere; and, if not, the quantity poured out is too large for the lumen of the tube to convey. The rent in the follicle may be maintained from below by the presence of the clot, and the secretion from the congested follicle may thus continue to discharge into the peritoneum. The peritonitis thus induced may be of an extensive and dangerous degree, and may even be fatal. Otherwise, by the organisation of the fibrin exuded, the ovary is rendered still farther adherent.

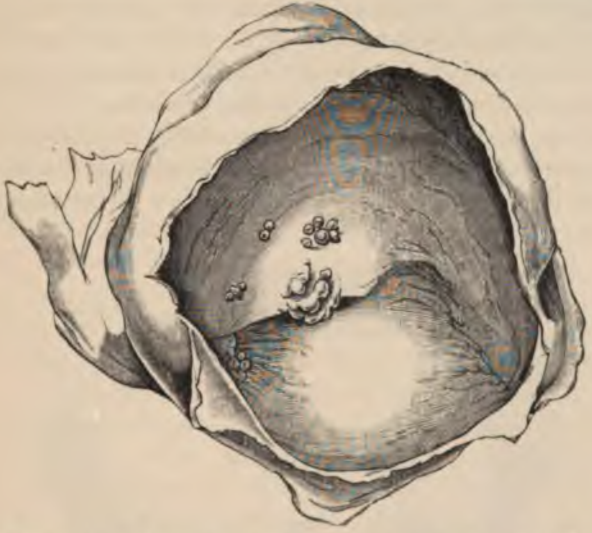
The ovary being now enclosed within a firm and tightly contracted fibrin case, the follicles form under a greater external pressure, and most painful attacks during ovulation and subsequently from the tension ensue. If rupture be effected, peritonitis may become recurrent.

But the internal wall of such a cyst does not always remain quiescent, or effect absorption, even in part, of the sac fluid. A cell development of a papillomatous kind may occur, and, originating in the epoophoron or paroophoron, spread from its epithelium; so that there are prominent cell-growths on the inner wall of the cyst, which form fluid far beyond that previously described, and the cyst may thus attain to a considerable size; or on the external aspect of the wall (figs. 85 and 86). This growth has no relation to progressive cystoma.

The direct tendency of the heavy follicular cystic ovary is to fall back, and thus to render the utero-ovarian ligament tense and pull back the fundus; hence a degree of retroversion of the uterus. But the uterus does not descend lower than this position, because the descent of the ovary is restrained by its attachment to the pelvic wall; and therefore the uterine descent is both caused and limited by the ovarian.

It will frequently be found on abdominal section in posterior displacement that the ovaries have peritonitically thickened walls, are enlarged by follicular cysts, and lie latero-posteriorly or posteriorly to their normal position and to the uterus; that the tubes are highly congested, stenosed at the uterine junction, dilated and highly congested externally to the junction, and that the infundibular membrane at the fimbrial extremity is highly congested and œdematous, and presents a convexity instead of a concavity; or that from compression in an abnormal situation the face is a flattened convexity incapable of receiving the ovule; and these conditions may be present even when the previous attacks of peritonitis, while thickening the ovarian wall, have not been sufficient to induce such fibrinous exudation as to cause adhesion of the tube or ovary to each other, or adjacent structures.

FIG. 85.



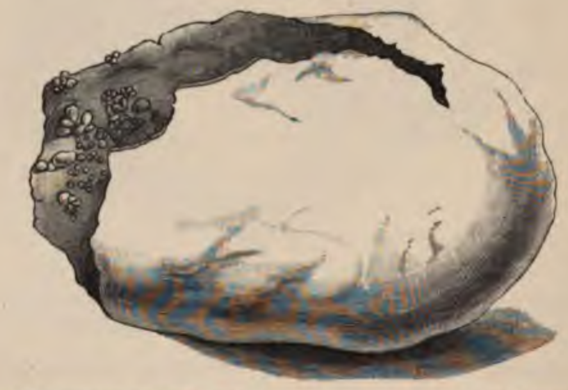
Follicular cyst of the ovary with papillomatous growth on its walls. (*From a specimen in the Melbourne University Museum.*)

This posterior misplacement angles the tubes at the uterine junction, and accentuates the tubal stenosis, which was the original cause of the effusion, which produced the peritonitis, which induced the thickening of the ovarian wall, which prevented the Graafian follicular rupture, which resulted in the formation of follicular cysts, which created an undue weight causing posterior ovarian descent, which dragged on the fundus of the uterus, which accentuated angling of the tubes at the tubo-uterine junction, and thus induced a recurrence and continuation of this series of morbid processes.

Symptoms.—The symptoms are those of the causationary diseases, as of the endometritis, tubal affection, peritonitis, and retroversion or retroflexion, described under their respective headings, with consequent debility, and those special to the ovary itself. These are referable to tension from within, and pressure on the ovary from without.

First of tension from within. After an interval of more or less ease, on the recurrence of ovulation, distension of the ripening Graafian follicle commences, the congestion increases, and the follicle enlarges, whereby the tension is increased, and reaches a climax in internal rupture of follicular capillaries; the outer coat being stronger under its preceding inflammatory thickening than the pressure from within, rupture does not occur, and the cyst remains; the pain in the lower abdomen of the one side, or of both if ovulation occur simultaneously in both ovaries, being coincident with the increase or diminution of tension. With this, in cases of extensive peritonitic adhesions, some fresh exacerbation of peritonitis from rapid stretching of fibrinous adhesions may take place, with its symptoms. Absorption commencing, or the cell wall having previously to a sufficient extent stretched, and being now relaxed, the pressure on the external coat is diminished, and the pain gradually lessens or ceases, until the next period of ovulation arrives, when the symptoms are renewed. Should the follicle, under the influence of excessive internal tension, especially by rupture of the capillaries, succeed in bursting, the contents passing into the peritoneum, the symptoms of peritonitis are present, which are

FIG. 86.



Tubo-ovarian cyst with papillomatous growths. (*The Melbourne University Museum.*)

proportionate to the irritation thus produced, and may be most acute. When the ovary is universally adherent and embedded in fibrinous exudation, there being no room for expansion, the pain may be almost constant and intensely depressing, and greatly increased by exertion, so that the woman is a permanent invalid.

Among the symptoms of pressure from without, as by location of the ovary with or without adhesions between the retroflexed body of the uterus and the pelvis, is pain, generally continuous, with accentuations at the catamenial period as described above. But even after the menopause, when the ovary is atrophic, and perhaps cirrhosed and small, the pain may still persist; for even though the uterus be thereby atrophied, the drag on the ovary by fibrinous bands or compression may persist.

The local pain is usually reflected on the cerebro-spinal axis in common with the diseases of causation. Thus pain in the lower back, the nape, the back and top of the head, over and in the eyes, and in the temples is frequent, and the sight is often affected; the appetite is diminished. The passage of the stools down the rectum pressing on the diseased ovary producing pain, defæcation is avoided, and hence constipation with absorption of fæcal moisture inducing a low form of blood-poisoning, loss of weight, and anæmia.

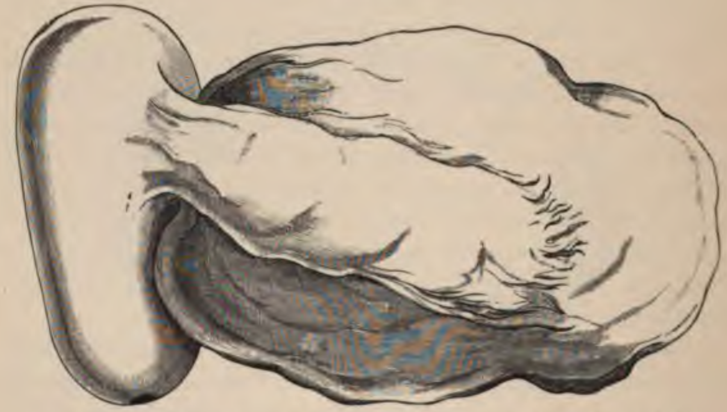
Diagnosis.—The diagnosis is generally concurrent with that of tubal disease, as there must have been proximal stenosis and distal effusion, and the resulting peritonitis has generally induced fimbrial adhesions and closure; but recovery may have taken place after catarrhal salpingitis or puerperal septic effusion of mild quantity or quality. It is therefore usually difficult to disassociate tubal from ovarian disease of this class, yet one may be more prominent than the other. The oval form of the ovary may be differentiated from the curly, and, if greatly distended, perhaps more sausage-like form of the tube; and the ovary may not be continuously traced from the fundus of the uterus as the tube may be. Occasionally the thin-walled, tense cystic ovary, particularly when much enlarged, is quite defined. It is not, however, greatly important to distinguish between them, for the treatment is similar.

2. Abscess of the ovary.

Definition.—A rare disease in which pus forms in the ovary; it is evolutionary from septic infection from the Fallopian tube; or is tuberculous, probably from a similar evolution.

Conditions.—The ovary much enlarged, hot, exceedingly tender and fluctuating, displaces the uterus or rises above it. When both are affected, as is common, one may occupy one side of the pelvis, pushing the uterus to the other side or more backwards or forwards, and the other be situated above the level of the uterus towards or in the abdominal cavity. The tube is diseased, and the fimbriæ closed and adherent, usually, to the ovary.

FIG. 87.



Gonorrhœal multiple abscess of the ovary with pyo-salpinx. The fimbriæ are adherent to the ovary, and the uterine end of the tube is stenosed.

Causes and Mode of Causation.—While the ovary is frequently congested and distended, it is very seldom inflamed, and it is probable that suppuration is always evolutionary. In the absence of direct evidence of idiopathic causation, I think it is fair to say that it is only attributable to the direct conveyance of pus containing pyogenic microgerms to the interior of the organ, which can only be possible at the time of rupture of a follicle. Nor at this time is it easy for this to occur, for the fluid of the follicle is passing outward, and the secretion of the tube away from the ovary; thus it is difficult for irritating secretions to enter the sac. But irritating secretions can, though with difficulty, be thus applied to the follicle; for in almost all cases they have previously induced a local peritonitis, which has caused such an exudation of fibrin as binds down the fimbriæ, and perhaps the ovary in such situations, that there is likely to be no communication between them. Yet abscesses of the ovary may occur, and it is possible to understand the manner in which they are induced under certain circumstances. If in septic, and particularly gonorrhœal, salpingitis, it has happened that the irritating secretion, escaping from the fimbriæ, has induced a peritonitis and adhesions, and an attachment of the fimbriæ to the ovary; that a Graafian follicle should rupture into the lumen of such an adherent tube, whereby there is a direct introduction of septic pus into the interior of the ovary; and that the sac then close, retaining the septic micrococci, ovarian suppuration ensues. In the same manner any other septic state of the tube may be communicated to the ovary. Puerperal suppurative ovaritis is comprehensible only in the same manner, unless it were that a septic ovarian phlebitis occurred, with suppuration resulting around it; or that an ovary thus previously septic became irritated in labour and assumed an active progress.

An abscess having formed in one part of an ovary, other sites are liable to be similarly affected, and thus multiple abscesses in an ovary are usual. This is probably from infection of developing Graafian follicles by transuding leucocytes in the inflammatory state of the ovary; and particularly by the necrosis of tissue induced by the pressure of the pus in the abscess and the engorged inflammatory capillaries in relation to the dense outer wall of the ovary.

Progressive Evolutionary Disease.—The pus, tending to make its way outwards in the direction of least resistance, induces a leucocytic transudation at the outer ovarian wall, and adhesion with adjacent peritoneum, and thus discharges into a viscus, generally into the intestine.

Such an abscess may thus discharge, refill, and be secondarily tainted with fæces by regurgitation or infection from the intestine through the sinus, gradually wearing out the strength by drain and fever. But the ovarian wall is very dense, and such rupture is so difficult that the abscess is apt to be large and to produce such a serious constitutional state as to necessitate operative action before rupture takes place. These suppurating ovaries are generally universally adherent, probably from the original peritonitis being thus extensive.

Symptoms and Diagnosis.—There is acute pain over the ovary, peritonitis and some abdominal distension, and a tumour more or less defined, especially on double palpation. The temperature is raised, and the pulse is rapid and thready. Generally, shiverings and high temperatures occur, and night-sweats. The symptoms are thus mainly those of pyo-salpinx, and the diagnosis is the same; but the expectation is largely in favour of the latter, the former being comparatively so rare.

Prognosis.—The prognosis is most serious, as indicated above, unless under successful operative removal.

CHAPTER XVIII.

PHLEBITIS AND EMBOLISM.

Definition.—Phlebitis is an evolutionary inflammation of the coats of a vein producing thrombosis.

Embolism is the escape into the venous current above the next afferent vein of disintegrating clot, degenerating cells, or purulent matter produced by the phlebitis.

Condition.—The walls of the vein are inflamed; the lumen is occupied by a clot, extending to or beyond the next afferent vein, in a more or less advanced state of absorption or disintegration, particularly towards its centre. At its upper part it may be loose in the vein, swaying in the current of blood, from which particles may have broken away, or the inner disintegrated fluid of the clot may be escaping through an opening in its not yet otherwise broken-down outer layer. In the veins above the site of the original thrombus, similar thrombi, varying in their stage of disintegration, but younger than the more distal, may be found. Should pieces of clot have broken away they may be found in the heart or lungs, perhaps at their line of rupture, matching the clot remaining at the original site.

Or the distal part of the vein may contain whitish pus-like matter, and higher in the vein continuous pus, perhaps with some thrombosis.

Causes.—The causes are—

1. Inflammatory, or
2. Septic.

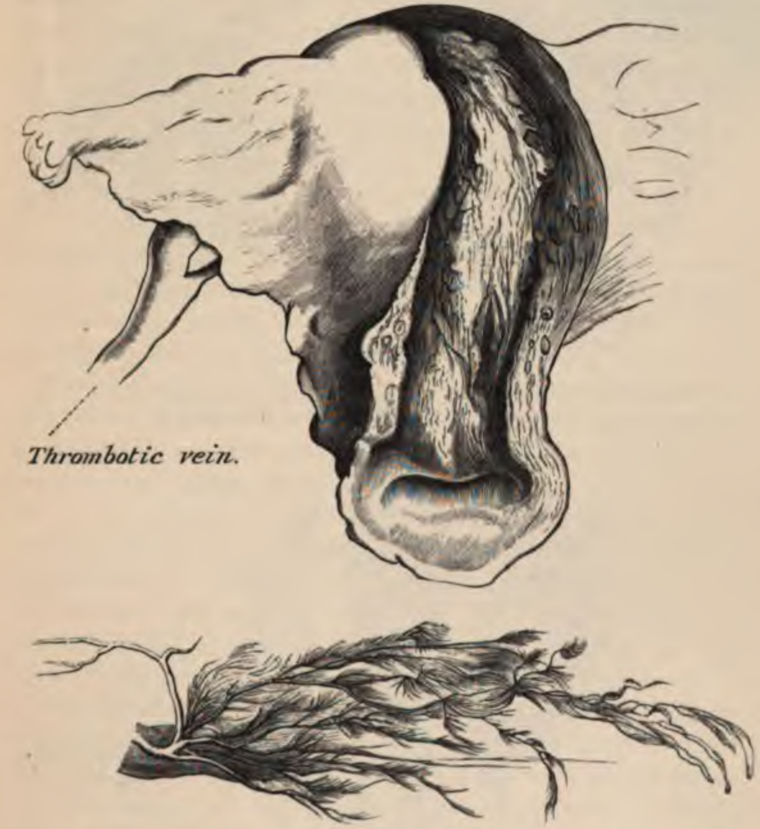
Mode of Causation.—1. In every wounded vein there is necessarily an inflammatory action resulting from the injury, effecting clotting. Thus, in the puerperal state, there is a disruption of the uterine sinuses by the separation of the placenta; in internal ruptures and in operations, injury is inflicted by tearing across or tying of the veins.

The inner coats of the vein becoming inflamed, a clot forms in the lumen, and, as stagnation of circulation occurs up to the next inflowing vein, the clot extends that distance. In the healthy subsequent process, vessels derived from the vasa vasorum, and subsequently connective tissue, develop from the walls of the vessel, pushing the clot, which is dead, or undergoes interstitial degeneration, towards the centre of the lumen of the vein. On contraction of the newly-formed connective tissue, the vessel becomes a dense fibrous cord, or, by the formation of a cavernous tissue, the lumen may be restored. Should arrest in this process occur, the walls being inflamed, the cohesion of the clot to the venous wall ceases, by absence or deficiency of growth of vessels from the inner lamina up to it, the progressive production of connective tissue to occupy the lumen of the vein is arrested, and the softening disintegration of the clot, commencing from within, proceeds, so that its outer layer may become a thin case, enclosing fluid disintegrating cells. The cardiac end of the clot vibrates in the current of the blood inflowing from the superior afferent vein, and in its state of disorganisation tends to break; or the case of it may rupture, when the degenerating fluid contents pass into the current of the blood.

In this state, by its local irritation, it induces progressive continuous inflammation of the vessel walls with advancing thrombosis, so that at times pieces of clot, large or small, or the fluid contents of a ruptured clot-sac, may escape into the circulation, and at times the breaking-down clot is shut off from the superior lumen of the vein by the secondary thrombosis, presently to similarly disintegrate. Should a portion of clot break off, an embolism occurs.

Such thrombosis is liable to be evolutionary from the necrosis of an extra-uterine fœtation after rupture; of an ovarian cystoma after twisting of the pedicle; of a myoma with some rotation; after ligature in cœliotomy, particularly where the heart or kidneys are degenerated; in the puerperal state, where the uterus is deficiently contracted, whereby the distal end of the clot of the sinus dangles towards or into the uterine cavity, which also contains a greater or less quantity of retained clots, or certainly disintegrating structures.

FIG. 88.

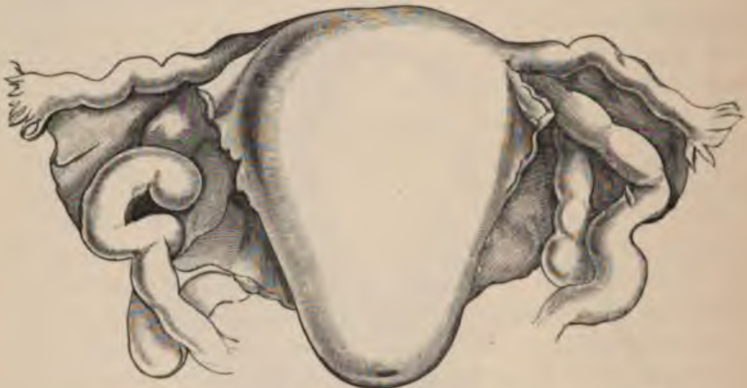


Septic retained placenta and thrombosis. The uterine cavity measures 7½ inches. (*The Museum of the Melbourne University.*)

2. Under septic bacterial infection the part of the vein originally affected may appear to contain only pus, which, however, is not pus, but the disintegrated clot with the organisms which effected its destruction; while superior veins are more or less plugged by thrombi and disintegrating clots produced from the inflammation of the walls, resulting from the irritation of

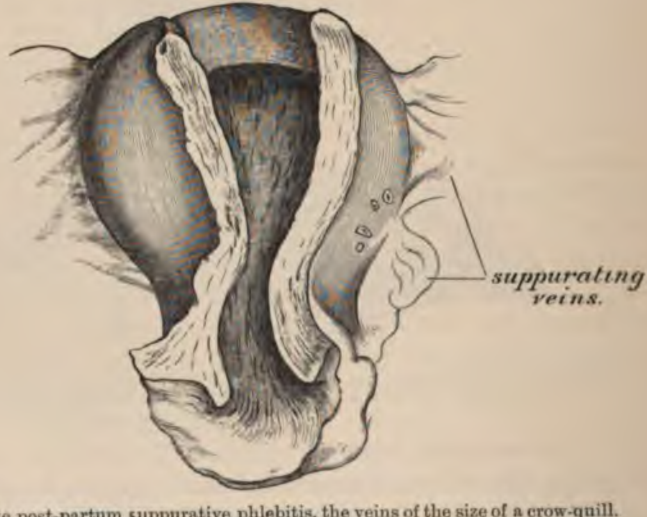
the presence of the inferior septic escape towards the heart; or pus may be found in them extending to a considerable distance, which, if not intermittently retained by superior clots, continuously flows into the current of the blood.

FIG. 89.



Thrombosis of uterine veins. Length of uterine cavity nearly 3 inches. (*The Museum of the Melbourne University.*)

FIG. 90.



Acute post-partum suppurative phlebitis, the veins of the size of a crow-quill. The cavity of the uterus is healthy. (*The Museum of the Melbourne University.*)

This suppurative form of phlebitis may be found in the puerperal state, in which, by some means, the clot in the sinus has become infected with micro-organisms. It may not be apparent how they have entered, for there may have been a clean expulsion of the ovum after a miscarriage, and the cavity of the uterus be subsequently found to be quite healthy; yet the vein, which need not be enlarged, nor larger than a small crow-quill, may contain pus, which continues to a considerable distance; or the disease may evidently have been conveyed to the clot by the septic state of the uterine cavity.

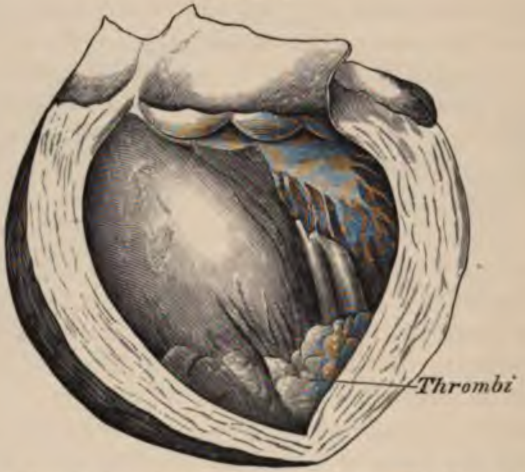
In puerperal abscess about a vein of a distal part, as in a leg, probably subsequent to obstruction to circulation, not only through the veins but also the lymphatics, the phlebitis would appear to be related to lymphangitis and phlegmasia dolens. In such cases the vein inferior to the original phlebitic site is usually continuously thrombic from a uterine vein.

Progressive Evolutionary Disease.—The thrombosis having commenced in a vein, as from necrosis from an extra-uterine fœtation, may advance along the left ovarian vein, and it is on this side that ectopic gestation is most common, until the clot enters the left renal vein; and, the phlebitis continuing, this renal vein also becomes thrombotic. Presently, the inflammatory action affecting the inferior vena cava, the right renal vein may also become occluded. The kidneys become engorged, and presently cease to secrete urine; and death, perhaps sudden, from uræmic poisoning ensues.

Or, the left renal vein being thus thrombotic and this kidney rendered non-secreting, the onus of urine-formation falls on the right kidney. The whole blood is infected with the microbes and is irritating. A lesion of the wall of the right renal vein may occur therefrom, with resulting thrombosis by attraction of microbes, and thus both renal veins may be occluded and the action of the kidneys stopped, without affection of the vena cava.

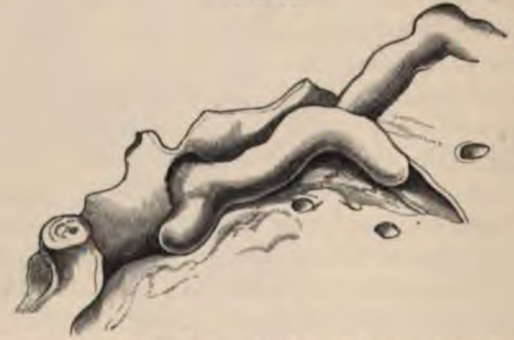
Or, particularly where the heart, kidneys or liver, or all are degenerated, perhaps after ligature in cœliotomy, the healthy formation of connective tissue in the vein at the occluded site does not proceed; and the clot, inefficiently adherent to the wall, or growing at its cardiac end beyond the entrance of the next afferent vein, sways in the current of the blood, and a part breaks off, producing an embolism. Should this be of considerable size, it may become entangled in the valves or columns of the right heart, producing an immediate obstruction to the passage of venous blood through it. But if the embolism pass through the heart, it impacts the pulmonary artery, or such branch as it enters, and prevents the passage of more blood. A hæmorrhagic infarction results, if the site be

FIG. 91.



Cardiac thrombosis in the case of figs. 89 and 90. (*The Museum of the Melbourne University.*)

FIG. 92.



Pulmonary thrombosis in the case of figs. 89 and 90. (*The Museum of the Melbourne University.*)

peripheral. The circulation of the lung may finally be restored by anastomosis of capillaries and absorption of the embolism; or this may break down and infect the pulmonary vessels.

Should the condition of the embolism, whether large or small, be septic from the presence of micro-organisms, these continue to multiply, form new colonies, and thus infect the branches of the pulmonary veins; so that the infected blood and thrombi may be conveyed through the left heart and the arteries to the other organs and structures of the body, producing fresh bacillary colonies at the sites of obstruction of these arterial emboli.

But the effects of the phlebitis may not be limited to the line of the circulation—that is, to its own layer. In this puerperal state a thrombus may occur in a small vein in the broad ligament, and some embolism, probably minute; the effects are characteristic, but ephemeral. But the phlebitis induces thrombosis above the level of the disintegrating clot, and there is sufficient vitality to combat and prevent the entrance into it of the microbes below it; or they are becoming attenuated. Yet the disintegrating inferior clot continues its process of necrosis under bacillary action laterally, so that presently its particles distend the venous wall, which breaks down and in its turn infects the connective tissue around, which necroses and proceeds to suppuration. The temperatures continue, a thickening is found in the broad ligament, and pus is ultimately evacuated, perhaps by operation, from deep in the iliac fossa; pelvic cellulitis had occurred about an inflamed vein.

Symptoms.—The incidence of the symptoms of phlebitis varies according as the cause is inflammatory or septic, and is referable to embolism rather than to vein inflammation, which is in the former state the normal mode of healing.

1. In the inflammatory state, whether the cause be a necrosis, as of a ruptured ectopic gestation, a twisted pedicle, or operative, the early symptoms are those of the cause; and are not referable to the phlebitis, of which there is no defined evidence. Six weeks after rupture of an ectopic gestation of the left tube, the ovum, tube and blood-clots being necrosed, the pulse and temperature were under 100; there was slight albuminuria, and the quantity of urine passed was

small. The operation, unduly delayed, was easy and complete. No urine was passed afterwards; consciousness was not regained, and death occurred at a temperature of 103° in eighteen hours. Both renal veins were closed by laminated thrombi of some standing, those of the left renal vein being older than those of the right; occlusion having apparently arrived at maturity at this time. Thus there were only symptoms of deficiency of quantity of urine, and albuminuria in a small quantity up to the time of complete closure by gradual encroachment of thrombosis of such large and important veins.

In a feeble woman, ten days after the removal of the appendages with an excellent progress, the highest temperature was 99·4°, and pulse 84. Without apparent cause there was sudden sense of intense dyspnœa, faintness, and impending death. The pulse, previously 80, was small and 140. The temperature, previously 99°, fell to 97°; the respirations were quick and shallow; a cold clammy sweat broke out; the hands, feet, and head were bluish, cold, and damp; there were great restlessness and anxiety of countenance, but conciousness was retained to the last. There was no cardiac murmur, and little air entered the right lung. The temperature rose to 99° and again fell to 97°; but the pulse became imperceptible, and death ensued in fourteen hours. A large embolus had escaped, and caught on the angle formed by the division of the branches of the right pulmonary artery. Perhaps the natural tendency towards health was making an effort for compensatory circulation, which raised the temperature to 99°, when the clot slipped in the current of blood; or it grew by adhesion of white corpuscles, causing increased obstruction, so that the temperature again fell to 97° and death occurred.

A woman of fifty, 5 ft. 10 in. high, powerful and gaunt, with an atheromatous aorta, had a dermoid tumour removed. Recovery was slow, as the temperature remained a little raised. In six weeks the temperature and pulse had been normal for ten days. Two hours after a violent altercation, the temperature suddenly rose to 102°, and the pulse to 130. Subsequently it varied from a morning temperature of about 101° to an evening temperature of 103° to 105°; the pulse gradually rising and becoming thinner. There were intermittent violent attacks of shivering, after which the temperature rose. In eight days she died. The thrombus which closed the right uterine vein had undergone a softening action, and was in process of absorption, when the violent mental emotion accelerated the heart's action, increasing the rapidity and vigour of the current of the blood, which was sufficient to cause rupture of the case of the clot, permitting effusion into the stream of the blood of the disintegrated clot-cells, which produced minute miliary embolism in the lungs.

2. In puerperal septic phlebitis, a woman of twenty-four, of good physique and strength, has an instrumental labour with her first child, and slight laceration of the cervix. After three days the temperature and pulse are about 100; there is some fœtor of discharge, but no retention of placenta or of clots, and the cavity of the uterus is washed out. The temperature continues to rise, but there is no evidence of peritonitis, nor of pelvic cellulitis, and the uterus is not enlarged. The temperatures in the mornings are from 100° to 101°; and in the evenings from 103° to 105°; the pulse varying from 120 to 130. In three weeks they begin to fall, and convalescence is gradually established. The house was unhealthy.

There has been a moderate septic phlebitis, which has happily not extended beyond the next afferent vein, but no extensive embolism, although some small disintegrating cells have probably escaped. Probably the original mildly septic thrombus was enclosed by a superior, healthier, stronger phlebitic clot, which was able to resist the bacillary influence, and it underwent normal changes and closed the vein. It was a very anxious case, in view of the nature and natural tendency of the disease.

A woman of thirty-five was attended in her first confinement by an untrained and uneducated woman, who had not even the qualification of having had a child. The labour was tedious, but at length the child was born. Flooding ensued for five hours, and the placenta was retained. A doctor was summoned, who found the woman very anæmic and weak, with a pulse of 130. The placenta was adherent, and was peeled off and completely removed; but the uterus had lost its power of contraction, and hæmorrhage ensued. A solution of perchloride of iron was injected, and the hæmorrhage ceased. The temperature gradually rose, and in two weeks varied from about 101° in the mornings to 103° and 104° in the evenings, the pulse being from 120 to 130. There was neither peritonitis nor pelvic cellulitis, and the lochia were slightly offensive. The patient said she was well and got up, contrary to directions. After five weeks she got on to the sofa, was seized with sudden faintness, and at once died.

There had been chronic phlebitis and thrombosis of a uterine sinus, with some escape of disorganising, disintegrating particles, and, finally, a large embolus broke off, and blocked the right heart.

A healthy woman, aged twenty-five, had a miscarriage, probably at two months, from a doubtful cause. On attendance a week afterwards the temperature was 102° and the pulse 120. The uterus was quite small and movable. There was no peritonitis nor thickening in either broad ligament. Puerperal phlebitis was diagnosed. The temperatures increased, pains occurred in the limbs and joints as if she had acute rheumatism, but there was no enlargement. She continued to get worse; the pains were intense in suddenly changing situations; there was great restlessness, with frequent violent shivering fits, and she slept only with hypodermics of morphia. The morning temperatures were from 100° to 102°, and the evening from 103° to 106°, but were very variable, and twice normal; the pulse from 130 to 150; and when the temperature fell, there was no reduction in the pulse. She died in two weeks in great pain.

On post-mortem examination there was no evidence of peritonitis or cellulitis; the uterus was quite healthy and small; the left uterine vein of the size of a crow-quill appeared to contain pus, and this extended upwards. There were infarctions of the lungs, liver, spleen, and kidneys.

This is a case of acute suppurative phlebitis.

These cases are typical.

Diagnosis.—In the inflammatory cause, whatever increase in temperature or pulse may be present is rather referable to the original disease or operation with some peritonitis than to phlebitis. Of course phlebitis is always present in injury to veins after operation; but there is nothing to indicate that it is proceeding beyond due limits. The diagnosis is thus dependent on the occurrence of embolism. When a patient suddenly shows a violent variation in condition from previous good progress to a dangerous state, as before described, or in a moderate degree, the various stages of embolism at once occur to the mind, and the diagnosis is made, but only at a very late stage.

In the puerperal state the high temperature and pulse indicate phlebitis in the absence of uterine septic retention, peritonitis, pelvic cellulitis, lymphangitis, or local injury with inflammatory action. The continuance of the high temperatures without apparent local causation is particularly diagnostic. The sudden occurrence of embolism in one of its forms accentuates the opinion.

Prognosis.—The prognosis is always serious. In the inflammatory state, as distinguished from the puerperal or septic, an enormous majority of cases recover without evidence of phlebitis, though it is certain that it always occurs. But if the thrombus have by constitutional debility or adjacent necrosis proceeded to such disorganisation and disintegration as to give opportunity for such special diagnosis, the disease has already advanced so far as to be imminently dangerous. No doubt many such cases recover, even after extensive pulmonary embolism; but the expectation is serious, for the phlebitis is apt to be progressive, and the effects of the embolism are most dangerous.

In the puerperal septic cases the presence of the microbes increases the danger, for fresh colonies are liable to be produced at distant sites; few recover.

CHAPTER XIX.

PELVIC CELLULITIS.

Definition.—Pelvic cellulitis is, as its name implies, an inflammation of the connective tissue of the pelvis.

Condition.—Two states occur. The first is quite common, which is a thickening at the upper extremity of a deep laceration of the cervix extending into the broad ligament, or there is a sloughing of the vesico-uterine connective tissue attachment. The second, which is commonly known as 'pelvic cellulitis,' is exceedingly rare; there is some thickening, frequently high in the broad ligament; later, resolution, or the formation of pus, which spreads in the layer of connective tissue affected, and presents in the direction of least resistance, generally towards the lateral abdominal wall, perhaps burrowing under the psoas and iliacus muscles, and presenting beyond their outer borders.

Savage states that König, to determine the probable course of diffuse abscess in the pelvic cellular tissue, injected into it at various points air and water.

(*a*) Between the layers of the broad ligament high up in front of the ovary or Fallopian tubes, the injection made its way along the psoas and iliacus muscles into the pelvis.

(*b*) Beneath the lateral ligament, close to the upper and forepart of the cervix, it filled the same side of the pelvis, passed along the round ligament towards Poupart's ligament, and, lastly, to the iliac fossa.

(*c*) Beneath the broad ligament, near the upper part of the cervix, but rather behind, it filled the posterior and lateral parts of the pelvis, afterwards passing along the psoas and iliacus muscles, and eventually into the pelvis (Howitt); but the spread of matter has shown itself as co-extensive with the cellular tissue.

Cause.—The cause is—

1. Puerperal, or
2. Operative.

1. The puerperal cause is of two kinds—

(*a*) Where the injury to the connective tissue is continuous with the lumen of the genital canal, as in deep laceration of the cervix uteri; and in sloughing of structures from pressure, as in the production of vesico-vaginal or vesico-uterine fistula.

(*b*) In the second more serious state, the inflammation of the connective tissue is due to the presence of a septic lymphatic gland, of a septic vein, or of a necrosed piece of connective tissue produced by long pressure; or it is evolutionary from pyo-salpinx, perhaps through lymphangitis or phlebitis.

Mode of Causation.—1. (*a*) Where the injury to the connective tissue is continuous with the lumen of the genital canal, as in deep laceration of the cervix uteri, the split is immediate as the child's head passes through the cervix, which is either congenitally deficient in size, or, as is frequently evolutionary therefrom, there has been connective tissue hyperplasia, which, not being capable of sufficient normal dilatation, lacerates. Should the parts remain aseptic, such healing occurs as is described in the chapter on laceration of the cervix; but if the part becomes septic, a cellulitis results, which in its progress and extent is proportionate to the quality of the sepsis.

But the case of necrosis in the production of vesico-uterine or vesico-vaginal fistula is somewhat different in that there is here not a mere split, but an absolute destruction of vitality of the structures intervening between the child's head and the pubes, and a slough necessarily results, which must escape. But the way is open through the genital passages.

(*b*) Septic matter present in the uterus may be absorbed by the lymphatics and engorge a lymph-gland. Emigration of leucocytes in relation to early congestive necrosis takes place, and the connective tissue is inflamed. The process must be of quite a mild character, else a general puerperal lymphatic septicæmia would ensue, far beyond the local inflammation of one lymphatic gland. Again, there must be just irritation enough for this gland to produce connective tissue inflammation, which has usually to advance to suppuration before we can definitely determine that the condition is that of pelvic cellulitis. Thus it is rare from this cause, because the irritation must be mild enough to avoid the more common systemic effects, and strong enough to produce extension to the adjacent connective tissue.

Another cause is phlebitis. The uterine end of a puerperal clot in a small sinus becoming infected by septic action, the clot tends to become weak in its constitution. Perhaps some separation of clot, in the form of embolus with symptoms of interference with the circulation and dyspnœa, may occur and recur. Were the vein large and the septic inflammation vigorous, the vein and its clot would progressively break down, and the woman die of puerperal septic thrombosis and embolism. But in pelvic cellulitis the phlebitic action stops short from deficiency of virulence and the natural tendency towards health, yet not so short but that a local destruction of tissue occurs. Around the inflamed vein leucocytes transude, effusion of fibrin occurs, and, perhaps to some extent by the pressure thereby exerted, the vein becomes occluded. The cellulitis then proceeds.

A third mode is by the influence of long-continued pressure of the child's head in labour, whereby cessation of nutrition of the connective tissue is caused, so that its necrosis results. This is evidently seen in the production by this cause of vagino- and utero-vesical fistula, when the urine only escapes by the vagina on the separation of the slough after some days. Necrosis and gradual separation of the slough must have thus occurred. It is possible that such necrosis of connective tissue may be produced by long pressure of the child's head high in the pelvis, for cases occur in which there is no apparent septic infection from the uterus, nor inflammation of the lymphatics or veins. The condition is then closely allied to that of the furunculus, boil, or carbuncle, in which connective tissue necroses; the connective tissue, being less well nourished, might die, while the better supplied uterine wall and peritoneal layers might recover their vitality; but the sequestrum of connective tissue remains as a foreign body, producing suppuration.

When evolutionary from a pyo-salpinx, one tube has been sufficiently pervious to permit impregnation. The pregnancy advancing, parturition takes place. The diseased tube is so compressed in the passage of the child that rupture occurs, in this particular case, at the lower border into the broad ligament, which, it will be observed, is not improbable, since the upper part of the tube is supported by the descending child, and the lower border is free and less sustained. The inflammation extends thence in the layer of the connective tissue into which the rupture occurs; but the pyo-salpinx continues, and the conditions are acute and virulent.

2. Necrosis of the connective tissue is liable to occur after some operative procedures; as, for example, by the separation of the connective tissue of the bladder from the uterus in complete hysterectomy, after which a slough may separate: but in the process of its separation there was cellulitis, as also in some cases following removal of myomata, which have grown between and parted the folds of the broad ligament.

Progressive Evolutionary Disease.—When the condition is puerperal, that state with its fatty degeneration, need of absorption and of contraction of hypertrophic structures is added to the local septic inflammation, wherefore the general effects are apt to be extensive. But a great distinction is to be drawn between the classes in which whatever pus is produced can readily escape by continuity of laceration with the genital passages and those in which the suppuration is enclosed.

In the causation of deep cervical laceration, or of sloughing from pressure, after a period of more or less constitutional disturbance proportionate to the degree of septic infection, cicatrisation occurs with hyperplasia, condensation, and retraction of the adjacent structures. Thus the uterus is drawn towards the site of the injury, and is there closely attached, the degree of such retraction and the capacity of expansion in a future pregnancy being determined by the extent of the uterine laceration and adhesion; this being of the cervix, it is liable to lead to successive abortions.

Should the connective tissue inflammation, however, be of a low progressive character affecting the deeper structures, the veins or lymphatics may become implicated, leading to puerperal phlebitis, thrombosis, and embolism; or to lymphangitis, blockage of the large lymphatic vessels of the leg, producing peripheral venous thrombosis or phlegmasia dolens.

But where the inflammation takes place in a deeper situation of the broad ligament from a lymphatic, phlebitic, or connective tissue necrosis without direct external communication, should resolution not occur, and pus form as is usual in cases sufficiently defined as to be thus diagnosed, it makes its way in the direction of the layer of connective tissue in which the inflammation has occurred, as has been previously described. By the burrowing of the abscess under the psoas and iliacus muscles, it may render them tense, and thus draw up and evert the thigh, and, by pressure on the lymphatics and the iliac vein, cause œdema of the leg.

Now, extensive retraction of the adjacent tube is usual, which may thus be rendered incapable of permitting the free entrance of the spermatozoa and passage of the ovum, and produce sterility on this side. Should pregnancy occur through this or the appendages of the other side, the expansion and rising of the uterus may be hindered or prevented, and abortion by irritation ensue.

By the non-application of the fimbriæ to the Graafian follicle, which thus ruptures into the peritoneum, by the impermeability of the tube by contraction or angling, and effusion into the peritoneum, peritonitis may result, and thickening of the ovarian tunic with formation of follicular cysts with evolutionary disease may ensue.

In the causation of pyo-salpinx rupturing by pressure of the child into the broad ligament, the action is vigorous, for the cause of the pus-formation in the tube continues, and is accentuated by the additional inflammation now induced. The pus thus rapidly increases and makes its way in the connective tissue layer, and may present even in the anterior abdominal wall. Yet the pyo-salpinx, in an additionally irritated state, remains, and may rupture into the intestine, producing a densely adhesive peritonitis and extensive matting, in which both sides of the pelvis are liable to be implicated, as well by the original cause of the pyo-salpinx as by the evolutionary progress described. The ovaries participate.

In the operative causation the progressive disease is by sloughing with pus-formation, and the course is dependent on readiness of drainage, or more extensive septic infection, tending toward phlebitis, with thrombosis of the iliac and renal veins, and lymphangitis with lymphatic obstruction deeply within the connective tissue, or peritonitis from the injury at the edges of the divided structures.

Symptoms.—In the cases of ready communication with the genital canal the temperature continues raised for a time, and presently, when pus discharges, it falls, and convalescence rapidly ensues.

In the puerperal phlebitic causation, some two or three days after delivery the temperature has risen; sudden symptoms of thrombosis, as some obstruction to central circulation, shortness of breath, and cold extremities, with rigors and cold perspirations, yet with high temperatures and rapid thin pulse, indicate the seriousness of the condition. But in the case in question the woman is not to die, and presently rallies. The high temperatures persist, but are intermittent. Later, some pain and thickening are found in one or other broad ligament, or perhaps only in an iliac region above Poupart's ligament, where there is some swelling. Thus the case proceeds for weeks, and sometimes months; when fluctuation occurs, and pus, perhaps quite deep, is found on operation, or the abscess slowly makes its way to the surface, and bursts. The convalescence is slow from the extensive damage done.

The symptoms in operative causes are proportionate to the facility of escape; but the temperature and pulse are apt to be high, and the conditions evidently most serious.

Diagnosis.—The diagnosis is mainly differential from peritonitis. Pelvic cellulitis is very rare, and peritonitis exceedingly common. In pelvic cellulitis there is no necessity for abdominal distension. The uterus may be normal, except for what local injury has occurred, but subinvolution is far less frequent. When the cellulitis is low in the broad ligament, there is thickening and a hard tumour quite low in that situation, which may be apparently due to a large tube or ovary, and the uterus is pushed to the opposite side thereby. There is not the board-like or horse-shoe induration of peritonitis, and constipation is not marked or obstinate, since there is no necessary temporary paralysis of the intestinal muscular fibres, though when on the left side, which is most frequent, the tumour of the cellulitis may, by its pressure, obstruct the passage of the fæces. When the inflammation is high in the broad ligament, scarcely anything is felt by the vagina, and only on abdominal or combined abdomino-vaginal palpation can the thickening be found.

But in some cases, and particularly in those in which the cause is rupture of a pyo-salpinx into the connective tissue by puerperal pressure, peritonitis exists with cellulitis, so that extensive connective tissue suppuration, perhaps extending into the abdominal wall, is coincident with peritonitic matting, and perhaps intestinal perforation.

The differentiation as between pelvic cellulitis and pyo-salpinx, or abscess of the ovary, is to be made by a realisation of the site, and of the direction of greater pressure and advance of the tumour, as well as by the previous history, and is always a matter of grave and delicate consideration; for the mode of successful treatment of the one would probably be fatal to the other.

Prognosis.—In cases of cellulitis discharging into the genital canal, with antiseptic treatment, the prognosis is excellent, except that an operation for the repair of the injured structures will probably be necessary later. In the puerperal cases the general expectation, with patience and exact appreciation of the condition, is that the case will be long, but the result favourable, though the woman will be greatly weakened by her long and febrile illness.

In the operative cases the prognosis is very serious, as indicating an acutely septic state, perhaps to be relieved by exact realisation of the local conditions, and successful operation for the escape of pus, or the happy discharge through a direction of least resistance.

CHAPTER XX.

CANCER.

Definition.—A degenerative, destructive disease, in which there is an excessive multiplication of cells of low type, tending towards amœboid organisation, evolutionary from local irritation, and frequently accelerated by neurotic shocks and debility, generally occurring in the parous. This form is usually either epithelioma, derived from the surface epithelium; or carcinoma, from the epithelioid cells of secreting glands.

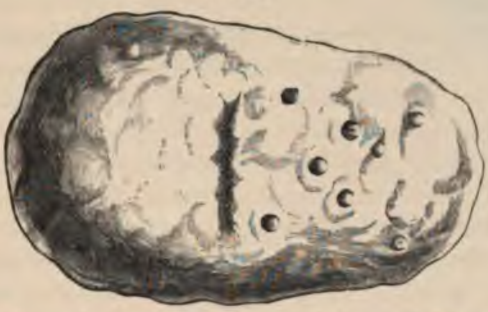
Condition.—Epithelioma commences at the cervix, or at some part of the vagina. The tumour is highly proliferous, and rapidly increases in size and at the base, so that it projects downwards, obscuring the original cause. It is soft and easily torn, when hæmorrhage, more or less free, results.

In carcinoma, the proliferation is more dense and interstitial, and the tumour is thus more laterally expanded on the original structures than prominent, and at its outer layer is an inflammatory zone. This density of structure of the lateral part of the carcinomatous tumour compresses its more central vessels, so that the central cells are deprived of nutrition and die. Pieces of the tumour thus necrose, and, undergoing decomposition, are peculiarly offensive. When such necrosed portions are confined in a cavity, or their drainage is defective, septic absorption occurs, and increased temperatures result. The woman is thus gradually emaciated, and death ensues.

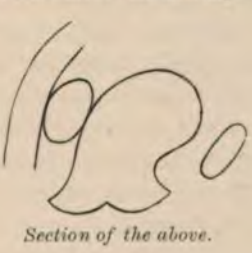
Causes.—There is always a previous irritation, whereby an excessive cell development occurs. Thus, in cancer commencing at the cervix, the surface was previously granular, hyperplastic, and dense; this is rarely virginal, and almost invariably from laceration; but it may be virginal in relation to myomatous polypi, with endometritis and irritable cervical edges. When beginning on the vagina, it is by friction of a granular cervix, usually from laceration, or from chronic irritating secretion from the uterus, but rarely; when on the corporeal endometrium, there was a chronic endometritis, not infrequently in relation to an unhealed granular placental site with subinvolution; when in the ovary, there was excessive irritation, as of follicular cysts closed by peritonitic thickening or adhesions; or from some neoplasm with rapid cell growth, and, similarly, in relation to multiple ovarian tumours and myomata. It is not improbable that in cancer of the breast, the irritation, when not evident in the gland itself, is sympathetic with the uterus. A depressed state of the nerves, whether from mental shock, and particularly from general nerve debility, which is habitually induced by the drain of the above-mentioned uterine affections, is usually present. There must also be a continuance of degenerating cell formation, deteriorating to the lowest divisional type. The kind of cancer, whether epithelioma or carcinoma, is dependent on the character of the tissue of the original site of attack, whether from surface epithelium or glandular structures.

Mode of Causation.—The most common primary site being the cervix, it is convenient to consider its development there. The faces of the lips being glandular, and generally everted by laceration and areolar hyperplasia, and the vessels compressed by the density of the latter, a constant excessive formation of cells of low type, epithelioid, glandular, mucoid, or purulent, ensues. The condition continuing, the drain and pain wear on the system, so that the general health suffers, and the weight is much reduced. The brain and spinal cord sympathise, neuralgic pains are habitual, and the nerve influence over the nutrition of the part is depressed. This stage generally persists for years. The menopause occurs, and the tendency is towards atrophy of the uterus, and therefore to a decreased blood supply. But the raw face continues exposed to vaginal friction, and the discharge continues, perhaps in a decreased quantity, and of a feebler quality, and there is a tendency towards degeneration to a lower type. In many women this condition, in a gradually increasing degree of atrophy, persists perhaps till old age, the diminishing blood supply producing diminished cell formation at the granular surface, as well as in the rest of these organs, so that at length discharge ceases

FIG. 93.

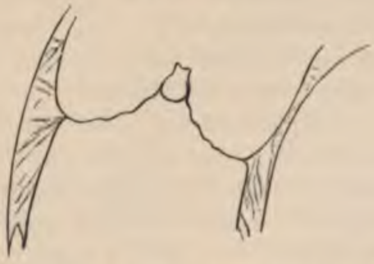


Malignant disease developed on deeply lacerated, everted, flattened, hyperplastic, granular, cystic cervix. The edges are very dense and irregular, and the face bleeds freely on touch. High posteriorly is a dense thickening, apparently attached to the anterior rectal wall. Patient aged 39. Seven children. Fat and sallow. Hæmorrhage two months.



Section of the above.

FIG. 94.



Woman aged 64. Section of carcinoma of cervix, with old laceration and granular hyperplasia, which never healed. The vaginal cervix has undergone some senile atrophy. The carcinoma first attacked the corporeal endometrium. The bladder and rectum are affected. The menopause occurred fifteen years previously.

altogether, and the atrophy may remove the density of the hyperplastic tissue, so that the everted granular surfaces diminish in size, retract, touch each other, and cease to be irritated by vaginal friction.

In others this process is ineffective, the irritation persists to a greater or less extent, even in advanced old age, and the excessive cell growth, which we call cancer, commences, at a time proportionate to the rapidity of cell degradation, even to the oldest ages, and, unless the originally diseased site be completely removed, progressively attacks adjacent structures.

Apparently it is a battle of cell formation, leucocytes fighting for the atrophy and absorption of the hypertrophic state of parts, and of neoplasms, while those of disease tend to continuous multiplication. In the deficient strength of the former, the latter win, and, continuing their multiplication in low type, produce cancer cells, which themselves possess an intense and progressive proliferation.

It may be asked, Why does not cancer develop on the granular face which most usually exists on the prolapsed uterus, where it is certainly very rare? The first point of consideration is that cases of prolapse are rare in proportion to those of granular face, and therefore should be rare in such proportion. The second is that, instead of the granular face resting on and rubbing against the vagina at every movement, the descended uterus occupies an axis of the vagina, instead of that of the pelvic brim, or one somewhat below it, and is thus prolapsed and removed from such irritation. The third, that such uteri usually retain a much more congested, and therefore larger, blood supply, and consequently the cells are better nourished, and tend less to degeneration. And fourthly that, being habitually exposed to the outer air, the granular faces cease to be macerated in their own and the vaginal discharge, but become dry, epithelium grows on them from the cervico-vaginal edge, and they heal extensively, and with a hypertrophic epithelium of normal type.

The same mode of causation pertains to the development of cancer cells in other organs of this region.

The character of the cancer growth is determined by the structure most exposed to irritation; if this be the vaginal epithelium, epithelioma develops; if the glandular structure, carcinoma.

Progressive Evolutionary Disease. — The multiplication of cells of a cancer type having commenced, advances by its own proliferation, as well as by absorption by lymphatics, and regrowth on and dissemination in the lymph spaces and glands. Thus, while at first the disease was confined to its original site and layer, it speedily invades adjacent as well as outlying structures. The cellular tissue, particularly in the case of an original cause by laceration into the vaginal junction, which is most common, very early participates, and the broad ligament is infected. Thence it involves the bladder or rectum, and presently the tubes, peritoneum, and ovaries. In the case of the ovary being the original site, the disease spreads rapidly over the peritoneum and its understructures, rarely descending deeply into the pelvis. In uterine carcinoma, the necrosing process advancing, openings may occur between viscera, as, for instance, between the uterus and bladder, the vagina and rectum. Finally, death results either from obstruction of the intestines, or from frequent and excessive hæmorrhages, the waste of the system by pain, excessive cell formation and drain of discharge, and septic absorption of dead material.

Symptoms.—The early symptoms are by no means defined, and are, indeed, commonly attributed by the woman to other causes. Frequently, the menopause has occurred, and, after some time, an irregular more or less continuous hæmorrhage occurs, with exacerbations, or there may be short intervals of cessation and recurrence. All this is attributed by the woman to change of life. Presently there is pain about the pelvis, lower abdomen and back, and she loses flesh rapidly. When there is an interval from hæmorrhage, there is a watery discharge, often blood-stained, which is, later, intensely fœtid and offensive. The pain becomes greater; a constant flow of urine from destruction of part of the vesico-vaginal wall, or of fæces from some loss of the recto-vaginal septum may take place; and distension of abdominal intestines from malignant obstruction. High temperatures from septic absorption, hæmorrhage into the peritoneum, inflammatory action at the outer zone of the cancer, loss of blood escaping externally, the drain of discharge, waste of the disease, and stabbing, burning, and aching pain, especially at night, gradually wear out the vitality of the woman, till death brings relief.

But in quite exceptional instances the disease occurs in the uterus at an early age, as from twenty upwards, when it is in relation, as afterwards, to a lacerated cervix with irritated granular face, or to an unhealthy placental site. Also the irritations of evolutionarily diseased ovaries occasionally, though comparatively seldom, develop cancer about the peritoneum, which affects the sexual pelvic organs.

Diagnosis.—The diagnosis in advanced cancer is easy; not so readily is the disease distinguished in its earlier stages; and the physician is usually not consulted till the disease has already advanced into adjacent structures, so as to be beyond possibility of complete removal. As cancer is mainly developed on a granular face from laceration, it is to the granular surface that attention is attracted. But the exact time of transition from the benignant hyperplasia to the cancerous multiplication of cells is undefined. Nodules of hyperplasia occur on the former, the exact nature of which is uncertain, which, if cancerous, spread with great rapidity over the remainder of the granular surface, and into the cellular tissue beyond the uterus, if the laceration extend deeply into the vaginal junction and broad ligament. When thus spread, the disease is certain of recognition; earlier microscopic examination gives undecided opinions, however suggestive. In epithelioma, the presence of a soft, readily bleeding, and easily broken mass growing downwards from the cervix into the vagina is diagnostic; and in carcinoma, the dense, hard-based, irregularly fissured, adherent, fœtid, granular face. A tumour of the uterus may exist above the pubes, which may be the malignant walls of the body alone; or the cervix may be synchronously affected. Again, when the disease commences at the placental site, the body may be thus enlarged, but the cervix not affected, when the diagnosis is dependent on microscopic examination, which is in all conditions applicable; but in early stages deficient in certainty, because of the gradual progress to the amœboid type. Constant hæmorrhage from the corporeal endometrium may cause treatment by curetting, when excessive sortness of the tissue to the curette may direct attention to its probably cancerous nature. Encroachment on the adjacent healthy structures of the organ in cervical attack is quite diagnostic, and still more so on to outlying organs, or above; but this is too late, and similarly in non-febrile chronic disease about the ovaries and peritoneum. In the later stages there is no doubt of the diagnosis at the cervix, and almost none in cancer about the peritoneum.

Prognosis.—The prognosis is that, if the whole of the disease, well beyond the encroachment of the multiplying cells, is rémoved, and the raw surfaces are brought together, and healing is effected by first intention, the woman is cured; if any part remain unexcised, proliferation continues; if a raw stump, which is to heal by granulation, remain, the malignant development may recommence on it for the same reason as was the cause in the original disease. If the disease have already advanced beyond the line of possible complete removal, it is necessarily progressive; and if progressive, it is fatal. Not, however, at a short date, but after an interval far beyond the expectation of the lay mind. Death occurs from a slow wearing out of vital power, not by sudden attack, except in very exceptional accidents of complication.

CHAPTER XXI.

MYOMA OF THE UTERUS.

Definition.—Myoma is a purely evolutionary pathological growth of the uterine muscular fibres and connective tissue, occupying situations in various relations to the uterine walls.

Condition.—The age is almost always over thirty, more frequently not under thirty-five, and often forty; and may be discovered subsequently. In strong sexual instinct with non-marriage the disease commences not rarely at the earlier age.

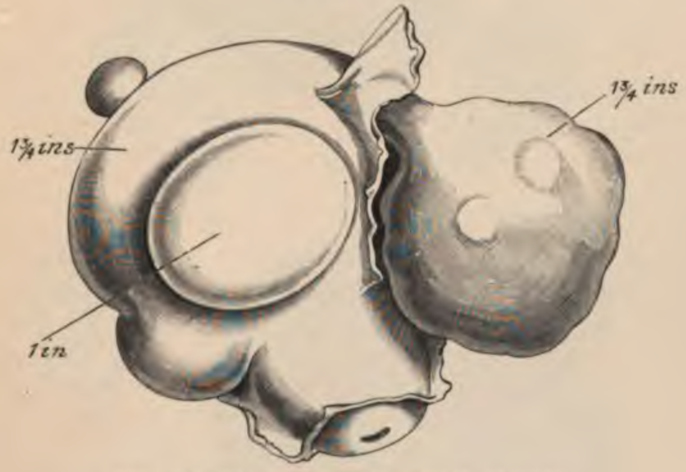
In the virginal state the opening may be normal, but more frequently, and in the married sterile woman, it is small, with granular edges and endometritis. When the parous married woman has been for many years sterile, there has been some laceration which has healed; but the opening, which is compressed by the connective tissue hyperplasia, is small, so that the spermatozoa do not enter, and there is hypertrophic sub-involution; and in the case of a widow the os may be normal. Evolutionarily the appendages may be adherent.

The tumour may be equally of the whole of the uterus, perhaps pyriform and rising above the umbilicus, composed of well-developed unstriped muscular fibres, softish, giving the sense of fluctuation, red, and of rapid growth. It is a rare form, closely representing the appearance and state of the pregnant muscular structure.

Elongation of the cervix is an evolutionary growth downwards at the cervico-corporeal junction analogous to the development of myoma, from the inherent capacity of and tendency to development in the absence of the normal stimulus of muscular multiplication in pregnancy. It is thus a virginal—that is, a non-parous—hypertrophy, as is myoma. It is rare, and generally commences between the ages of twenty and thirty; the uterine development is vigorous.

The most common kind—and it is very common, and is apparently rapidly increasing in frequency—is a tumour, and more frequently many tumours, of rounded form, dense, generally having a feeling of solidity, but occasionally of doubtful fluctuation, occupying the pelvis, and perhaps a large part of the abdomen; or the uterus may have risen out of the pelvis, and the tumour be abdominal with rounded projections in various directions; or it may also have grown between the layers of the broad ligament. On section, the structure is gristly, and the cut faces are convex, white or pale-grey, and appear fibrous. Under the microscope, spindle-shaped unstriped muscular fibre cells are seen in bundles, or as tumours, surrounded by a connective tissue capsule, which may be loose or compact.

FIG. 95.



Sub-peritoneal myomata, with various attachments.
(*The Melbourne University Museum.*)

Clinically, such tumours may occupy three situations, and be—

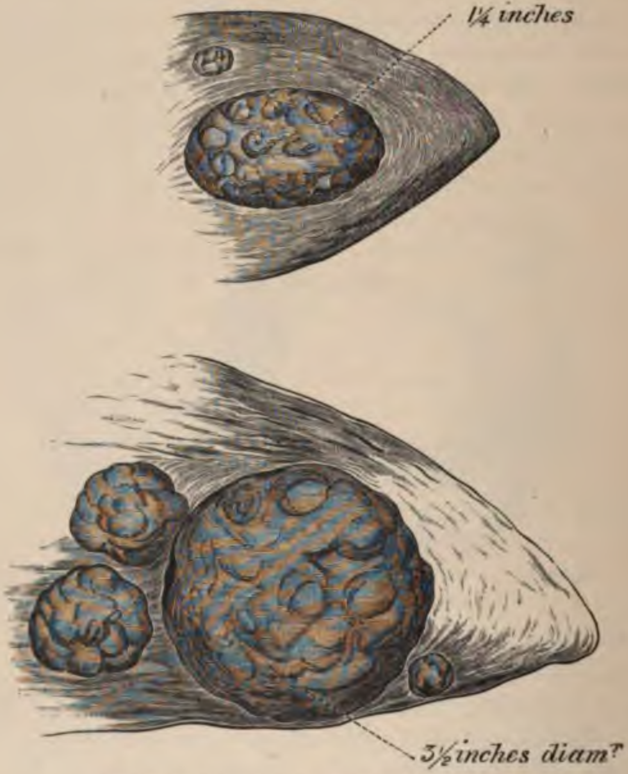
1. Subserous;
2. Interstitial; or
3. Submucous;

and it is not rare to find tumours occupying all situations in the same uterus.

1. The subserous tumour projects from the sub-peritoneal surface of the uterus towards the abdominal cavity. The base may be broad, pedunculated, or the tumour may even have become detached from the uterus.

2. The interstitial myoma occupies the mid-layer of the uterus, and continues to grow therein without special tendency inwards or outwards, however large its general size may be, but of course encroaching in both directions. In relation to the cavity of the uterus, it may be situated anteriorly or posteriorly, and if it appear to be laterally, it is generally from some rotation of the mass, effecting an obliquity of the uterus; or a tumour may spread between the layers of the broad ligament.

FIG. 96.

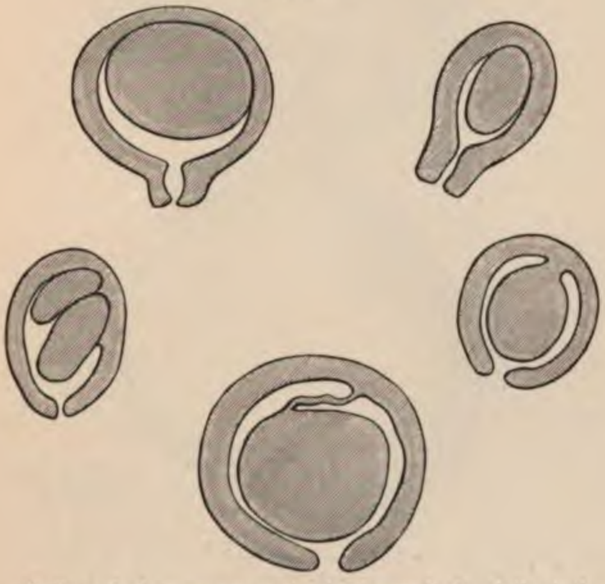


Sections of interstitial myomata of the uterus.
(*The Melbourne University Museum.*)

Such growth is most frequent in the body and fundus of the uterus; but it is not rare to find the tumour also occupying the cervix, and extending quite to the level of the external os, and thence projecting backwards into and filling the sacral cavity.

The tumour may be a single growth; but generally there are a large number of tumours, of which one or more has received greater nutrition, like the large forest tree, and has crowded out the others. Such growths advance in the direction of least resistance, in accordance with their own tendency. The size to which they attain is proportionate to their nutrition and their duration, but their growth is slow.

FIG. 97.

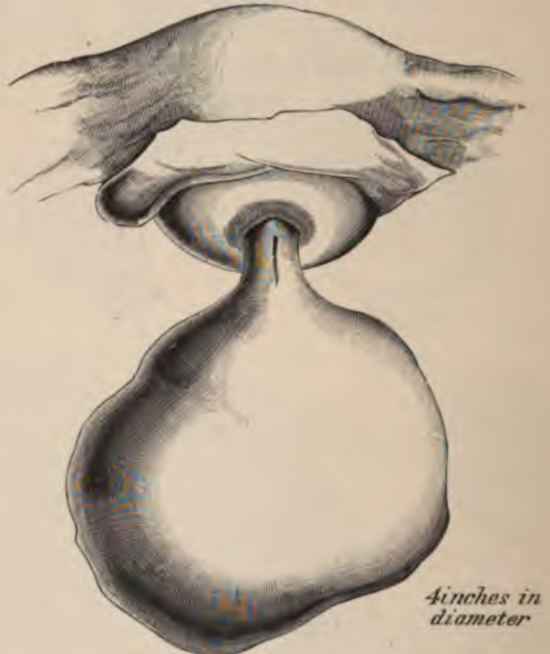


Sections of sub-mucous myomata, showing mode of evolution to the polypoid form.

3. The sub-mucous myoma has its direction of growth towards the cavity of the uterus, so that it projects into it, forming in its various stages a convexity to the uterine cavity; an intruding tumour, with a broad base, or narrowing to a thin pedicle composed of vessels, connective tissue, and stretched uterine mucous membrane. Such myomatous polypi may be quite small, frequently of the size of an ovoid orange, and may

attain to twice the size of a man's head, filling a much distended uterus; and, later, protruding in an hour-glass form into the vagina; or becoming completely extruded into the vagina, except as to its pedicle. Of this form there is usually but one tumour, probably from the mode of growth and extrusion affecting the nutrition of other sites of such muscular creation; but this is by no means always so, as secondary polypi may be found at a short interval after the removal of the more prominent.

FIG. 98.

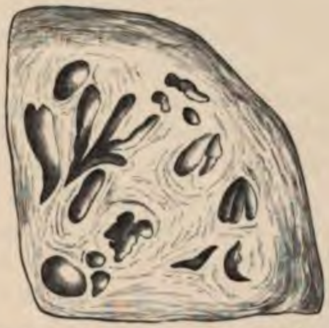


Uterine polypus, 4 inches in diameter, escaped from the cavity, with long pedicle. (*The Melbourne University Museum.*)

But while myomata are usually hard and dense, occasionally the tumour is found to be soft and semi-fluctuating; and this is frequently so in the polypoid form, containing much serum, and enlarged lymph spaces filled with lymph. Occasionally a uterine tumour distinctly fluctuates, while an adjacent tumour or tumours are dense; and, in the former, lymph spaces or cavities are filled with clear, semi-opaque or apparently purulent fluid.

The pampiniform plexus and the uterine veins are apt to be varicose; the tubes narrowed near their uterine junction, and expanded and curly externally, perhaps with hydro or pyo-salpinx; and the ovaries follicular, and perhaps compressed by the tumour: peritonitic bands about the ovaries and tubes are frequently present.

FIG. 99.



Section of a portion of a soft œdematous myoma, showing dilated lymph spaces, general œdema, and absence of defined separate tumour capsule. (*The Museum of the Melbourne University.*)

Cause.—The cause lies between the instinctive sexual uterine production of the next generation and the inability from absence of entrance of the male element: whether from non-marriage; or in marriage, either from a defective or diseased state of the canal or appendages, or prevention of pregnancy.

Mode of Causation.—In these conditions the woman's frame is generally large, well developed, and fat; the sexual instinct, appetite, and uterus are well developed, but the opening is apt to be of deficient size. In the virgin state, had marriage occurred, as the woman's desire demanded, it is probable that pregnancy would have ensued, and that the uterus would thus have been thoroughly occupied in the production of children; and there would have been no myoma. But the uterus, being debarred from its normal functions of puerperal muscular growth, the muscular fibres develop without the oval stimulus, usually in a multitude of bundles, each of which becomes a separate tumour, and is surrounded by its own connective tissue capsule. But the nutrition and environment of some is greater than that of others, and these become the prominent tumours.

Thus the form that such a muscular growth may take is dependent on the inherent capacity of vital increase in the nuclei. Should sexual appetite be very powerful, the muscular development may be of such a kind as closely to approach that of the pregnant uterus; if somewhat less, the muscular fibres may grow in colonies, and the general stimulus permit a similar increase of connective tissue, which encloses and represses them on their excessive multiplication, compressing the internal nutrient vessels, but permitting their increase at the outer border; or the connective tissue cells may be greater in proportion, and the tumour be rather fibro-myomatous than myo-fibromatous. In all there is a strong sexual instinct, but it is greater in the myomatous than in the fibrous form.

In marriage with subsequent myoma, there is the same main condition that the spermatozoon does not meet the ovule, and this may be dependent on the man or the woman—generally, however, on the woman. The opening is in some condition of deficiency of development in size, for the uterus is always well developed by the existence of the strong sexual instinct. The condition is, therefore, that of the well-developed uterus with deficient size of the opening. As has been before described under endometritis, endometritis ensues from obstruction to escape of secretions, and this state is almost invariably present in myoma in the married. To such an extent may this exist, that the pain of escape at the catamenia may be greater than that of labour, so that the woman rolls on the floor and screams.

An intermediate state exists in which a woman is widowed, or, probably from laceration of the cervix, ceases to have children for perhaps ten or fifteen years, and a myoma develops, when, if she marry or be married, she may become pregnant.

Progressive Evolutionary Diseases.—The tumour or tumours having grown are subject to the conditions of their environment, and similarly impress adjacent structures with their influences.

Thus, as to the tumour, its increase in size presently affects the ease of circulation through its vessels. The arteries, with the pump of the heart behind them, have great power of conveyance of blood into the tumour or to its borders; but the veins are easily compressed, as between the tumour and the pelvis, or by angling in growth of the tumour, or by partial rotation. Thus there may be some obstruction to venous return. The pampiniform plexus of the ovarian veins, which is much enlarged in pregnancy, is similarly increased in this bastard condition; and, under the influence of the pressure induced, which in pregnancy may be desirable, may be exaggerated by angling, by pressure, or rotation in myoma, become varicose, induce a distal effusion of serum, and thus an œdematous state, which is liable to be accentuated by similar compression of the lymphatics. In pregnancy the uterine tumour grows in a defined pyriform shape, which permits a sufficient venous and lymphatic return, and in due time, on parturition, a complete relief from pressure. But in myoma the tumour may steadily grow, adapt itself to and fill the various cavities and internal pelvic inequalities of the skeleton, and there is no final relief, unless by atrophy at the menopause. Thus by such compression of the veins and lymphatics a tumour may become œdematous, and the lymph spaces dilated and filled with fluid, which on removal coagulates at a lower temperature than that of the body, and in some cases within the body.

In this manner, as well as by formation of fluid by endothelial cells in myomato-cystic cavities, collections of such fluid may be produced, and on draining such tumours the solid matter is found to be quite small.

Such œdematous tumours are not usually found when small, for the venous-lymphatic obstruction has not occurred, since the pressure has usually not been efficient. Also, when the tumours are numerous, they quietly adapt their form to the environment of the skeleton, and the pressure is not so much on them as on the adjacent soft parts, for the vigour of nutrition is divided. But the tumour that has received excessive blood supply and grows vigorously is not to the same degree restrained by these influences, and its vessels are thus peculiarly susceptible to conditions facilitating obstruction; and hence it is that single large myomata of mature age are specially the subjects of œdematous infiltration and dilated cystic cavities.

Such tumours do not bleed on section for the same reason that an œdematous leg when cut exudes only serum, or serum slightly tinged with blood; for the serum by its quantity has compressed the vessels, and gradually expressed the blood. The œdematous myoma is thus evolutionary from the ordinary tumour.

When the myomatous development has been excessive, and the capsule strong and relatively non-expansive, the arterial blood has difficulty of entrance; the return is still more limited. The nutrition of internal myomatous cells of the tumour is most affected, and they undergo at first a slow fatty degeneration. This increases; and thus presently a rapidly progressive disintegration, proceeding outwards from the centre of the tumour, occurs. Such tumours have been of intense hardness, whence the vascular obstruction, and resemble a cannon shell, solid in its external part, looser internally. When a trochar is introduced, no fluid need pass, for the pressure of the atmosphere or of the adjacent muscular forces does not counteract the solidity of the capsule: disintegration and absorption, particularly after septic exploratory puncture, may result from such degeneration with the usual fatal results, unless the tumour be successfully removed by operation.

Or the degeneration may be of a slower kind, and effect a calcareous change in the capsule and coats of the vessels; the central tissue becoming atrophic.

The encroachment of an interstitial or sub-mucous tumour on the corporeal mucous membrane distends and irritates it so that a hypertrophic state of it and the subjacent vessels may result, and the veins become by obstruction varicose. On the occurrence of the catamenia these veins lacerate, and by their varicosity have lost power of contraction in due course, and thus excessive hæmorrhage is prolonged. Similarly in the case of some conditions of pressure on lymphatics, which discharge quantities of large, pale, yellowish clots into the uterine cavity.

When a sub-mucous myoma has become polypoid within the cavity of the uterus, either by pressure on, or rotation of, its pedicle, or by clonic contraction of the uterus in mimic labour for its expulsion, or from extrusion through a rupture in its capsule, or on partial operative removal which produces the same effect, the tumour may die and become septic, producing septicæmia.

The pressure of general myoma on the Fallopian tubes is such as to compress or angle them. Thus they may be found to be quite thin near the uterus, and to bulge from some distension more externally; and the fimbriæ are generally œdematous, the external infundibulum tending to be convex rather than concave. Thence fimbrial effusion and peritonitis; and peritonitic bands are frequently found in this situation. By the pressure on the fimbriæ these are unable to adapt themselves to the Graafian follicles, which thus burst into the peritoneum; and if under the influence of previous difficulty of rupture by peritonitic thickening of the walls, additional causation of peritonitis is present, through rupture of follicular cysts.

The tumour presses on the ovaries and produces difficulty in the performances of their functions, and thus irritation; but the pressure is persistent, not intermittent, so that atrophy is presently liable to ensue unless the ovary should have risen above the level of the brim of the pelvis and be free from such pressure, when congestive irritation is apt to be in the ascendant.

When a myoma packs the pelvis it presses on the rectum and induces constipation, which leads to some distension of the abdomen by gas and fæces, and dyspepsia, with their resulting malaise. Yet the woman generally remains fat. This is, to some extent, to be accounted for on the same principles that in pregnancy a very similar tumour for months occupies a similar position without any particularly inconvenient effect.

And similarly, from pressure on the bladder, micturition may be frequent, but the inconvenience may be much less than would be expected.

In case of excessive and repeated hæmorrhages the body may become anæmic, but is still usually fat, for the constitution is vigorous. Should the hæmorrhages, however large and prolonged, have a considerable intermittence, the recovery is rapid. But if frequent and almost continuous, the nutrition of the heart, kidneys, and liver is affected, and their degeneration ensues.

Pressure of a large tumour on the iliac veins or ascending vena cava may induce venous obstruction in the legs, and thus œdema; but the capacity of adaptation to the environment, as in pregnancy, is ever present, and the effects are much less than would be anticipated.

Symptoms.—The most frequent symptom of myoma is menorrhagia—that is, more frequent, more prolonged and excessive, menstrual flow in relation to the normal condition of the woman, and this in various degrees. Yet this is not found in the sub-peritoneal form, when tumours in the other situations are absent; for there is only a peritoneal projection, and no interference with the uterine muscular or mucous structures.

In the interstitial and sub-mucous forms there is pressure from without on the endometrium, and thus distension and congestive alterations in its relations. Hence irritations are induced with endometritis, and excessive secretion from the corporeal and perhaps cervical glands. In the married state without pregnancy and with endometritis the symptoms of dysmenorrhœa, which may be intense, are combined with menorrhagia. The clotting of the excessive blood renders the expulsion yet more difficult from the defective muscular power in consequence of the presence of the myomata and from the deficient size of the opening. In case of the formation of large fibrin clots this pain may continue between the menstrual periods, and these conditions in themselves are symptomatic of the affection.

Diagnosis.—The presence of a highly multi-nodular abdominal and perhaps pelvic tumour, stony in character, combined with menorrhagia and sterility, is diagnostic. Many cases occur which are not thus readily defined.

The usual density of the structure of a myoma, giving perhaps, either by the abdomen or the vagina, a stony feeling, is indicative of this disease. Yet this is only to be found in states of great compression of the muscular fibres within their inclosing capsule, and is absent in the looser formations, and in those which are complicated by œdematous infiltration and cystic developments. In the redder looser tumour the state is similar to that found on palpating the thigh; when tried for fluctuation transversely, this is apparently certain; but longitudinally, in the line of the fibres, absent. In the myomatous uterus of general hypertrophy the muscular fibres are situated in such various directions that such fluctuation may appear certain, even when the tumour has been exposed by abdominal section; and thus great care in regard to the value of the sensation is needed.

When œdema is present, fluctuation is also evident, and necessarily in myomato-cystic disease, less certainly in disintegration of the central cells, but proportionately to the thickness of the dense walls, and to its extent.

The sound usually enters a distance above the normal, and it may be many inches—not, perhaps, in the normal direction, or without some insinuation or partial rotation that it may find its way along a devious channel. The passage of the sound along the canal to a distance beyond that of a normal or subinvoluted uterus into a tumour, combined with frequent and excessive menstruation, and the absence of previous symptoms of pregnancy, is diagnostic of myoma. But that the length of the uterine cavity is normal does not disprove the presence of myoma, for the growth may not have such a situation as to have elongated the canal.

Various diseases simulate myoma. Thus, an adenoma of the ovary is solid, and may be closely packed on to the uterus; the age may be quite comparatively youthful, and the sound enter the normal distance, both of which are unlikely in myoma.

An ovarian cystoma may contain much solid matter, or the cysts be so small and agglomerated as to convey the sense of solidity, and the sound may enter a subinvoluted uterus 3½ to 4 inches. Menorrhagia may be absent or present.

A dermoid may be very resistant, and be dense from the presence of bones.

Conversely, a myoma may be œdematous or cystic, and of rapid growth, and menorrhagia is not essential. Also, the myomatous uterus may be pregnant.

The diagnosis is undecided in such cases, though a probably correct opinion may be formed.

Prognosis.—Myoma, being usually a disease of slow growth, gradually accommodating itself to the inequalities of the pelvis, may persist wonderfully long without producing a condition destructive of life. Woman is so made as readily to permit extraordinary pressure by the enormous tumour of pregnancy, so that the existence of a large myoma only differs therefrom by its permanence and concurrent affections, particularly menorrhagia. Thus it is mainly by abdominal influences of pressure —as by the packing of the pelvis effecting intestinal obstruction, the continuance of menorrhagia, and the existence of progressive evolutionary disease—that the system suffers. Should the relations of the tumour to the ovaries and the uterine cavity be such as to permit the occurrence of the menopause, the myoma usually atrophies, and the mere presence of the tumour, with absence of undue abdominal pressure by dress, may be unimportant.

But when the menorrhagia persists, the heart, kidneys, and liver degenerate by deficient nutrition through spanæmia.

In cases of œdematous and cystic myoma, the obstruction to venous return exists, so that the disease continues, and generally progresses.

If the tumour compress an ovary, perhaps by partial rotation, though the myoma may atrophy after the menopause, the pain may continue ; but recurrent peritonitis or impeded ovulation may be expected to cease.

The mortality from myoma, except in the cases of internal degeneration, is exceedingly small, though the inconveniences, malaise, and illnesses may be frequent and occasionally severe.

CHAPTER XXII.

GENERAL PRINCIPLES OF TREATMENT.

Theory of Treatment.—The considerations contained in the foregoing show that no disease is in itself necessarily paramount until the ultimate evolution of peritonitis or septicæmia is reached; all other conditions, unless the evolution of myoma, or the accident of fatal hæmorrhage, as from rupture of an extra-uterine fœtation, being progressively liable to attain to one of these ends. But it is found that endometritis is a central affection reached in all in their course to finality, with the possible exception that in congenital atresia with catamenial retention the cavity of the uterus is dilated, and not necessarily inflamed.

Thus, apart from atresia, a case presents some stage or combination of the following conditions:—

1. Endometritis, resulting from, or coincident with, congenital abnormality of development, whether of the large os with eversion, or of the minute opening; laceration of the cervix; sexual influences, particularly absence of marriage and gonorrhœa; and operative measures, with or without granular eversion and connective tissue hyperplasia, and increased weight of the uterus.

2. Misplacements of the uterus, vagina, and rectum. Of the uterus the malpositions are anteversion and anteflexion; perpendicularity, retroversion, or retroflexion, according to the axis of the pelvis which the uterus occupies; lateroversion or lateroflexion, with or without adhesions; and prolapse, with perhaps vesicocele and rectocele.

3. Congestive or inflammatory enlargement of the tubes or ovaries, usually in the earlier stages with more or less posterior, in the larger conditions superior displacement.

4. Peritonitis with exudation of serum or fibrin, or of these degenerating into pus. Such fibrin may cause the adhesion of adjacent parts, and within such enclosure may be collections of serum or pus.

It is thus quite impossible to treat one portion of this series of local affections without bearing strongly in mind the cause as well as the stage to which progressive disease has attained; and as patients do not take advice until they have suffered for a considerable time, and often not till they are passing through the whole series, it is usual that several of the evolutionary conditions are present. Powerfully impressed with these views, we may proceed to the consideration of the treatment of these diseases and the complications from two points of view: the first in the position of prophylaxis, the advanced guard, which includes the prevention of the disease, as well as the avoidance in our treatment of doing harm, so that we actually produce or hasten evolving conditions; the second, that of seeing the line of treatment needful for the cure of the conditions present, and so the cessation of the tendency towards the further evolution of disease, that the organs may be preserved in their complete condition with uninjured functions, or as nearly so as the conditions of damage existing at the time of treatment permit. In order that the latter may be induced it is necessary to—

Essentials of Treatment.—1. Insure free and permanent drainage of the uterine canal;

2. Produce a healthy state of the endometrium;

3. Heal all granulations of the os and cervix, remove connective tissue hyperplasia, bring lacerated surfaces normally together, and thus reduce the undue weight of the uterus;

4. Support the uterus, when required, without inducing evolutionary injury or disease;

5. Reduce abdominal pressure to the minimum;

6. Strengthen the system; and lastly

7. Induce general involution of the body by strengthening the system; and

8. Where the previous measures have failed and the disease is persistent or dangerous, remove the ovaries and tubes.

General Considerations: Diagnosis.—Accurate diagnosis of the conditions, perfect cleanliness, delicate manipulation, and the production of no pain on examination, are assumed.

Prophylaxis.—As the occurrence of peritonitis almost always permanently destroys the perfect health of the woman and her capacity for propagation, as well as places her life in imminent danger, it seems well to mention under the separate headings measures which tend thereto for avoidance. As also in the treatment of these affections it is desirable or necessary to avoid pain, the administration of anæsthetics may be considered in this relation.

On Anæsthetics.—Chloroform is certainly a very dangerous anæsthetic for women, from heart depression; and I have seen a large number of almost fatal cases from chloroform inhalation under many doctors from their implicit faith in it, which have entailed such gymnastic exercises and anxiety as I hope never to have again to endure. Not so with ether, from which I have never seen danger. It does not suit all, yet carries with it safety by heart stimulation. It is wisest to commence with ether, and to modify the inhalation with chloroform if ether be found to be too stimulating, recurring to the ether whenever it can be borne. In subsequent mention of anæsthetics ether is accordingly named, but with the idea that it will be modified by chloroform as the constitution requires.

On Positions.—In the following descriptions of position the 'dorsal' is intended to imply lying on the back comfortably and reposefully, with the legs equally drawn up. The side position is purely the side position, with one knee lying on the other and one foot on the other, so that the pressure of the atmosphere is not brought to bear on the vaginal roof, when air may enter the higher cavities. 'Sims'' position is having the left arm well behind the body and the right knee over the left, so that both touch the table; the woman lies on the left cheek, left breast, and half the abdomen, the head is at the far superior angle, the buttocks at the near edge of the table, and they are oblique; the hands neither press nor grasp anything, but lie relaxed. The position is one of complete repose, as if the woman were asleep in this position, and on the introduction of Sims' speculum the atmosphere distends the vagina so as to balloon it.

Use of Instruments.—It is assumed that no other than Sims' speculum is ever used. The makers have so varied the form and weight of Sims' specula from his pattern that there is little wonder if this instrument has with some fallen into disfavour. Thus the size ordinarily used may be clumsy and weigh 9 ounces, while his is under 5½ ounces; inferences as to use are unnecessary. The virginal os, with a small but patent hymen when relaxed, under a reasonable light may be seen without injury with his No. 1 speculum, weighing 3¼ ounces.

A sound of the ordinary or a smaller size can always, except in the case of atresia, be introduced if it be adjusted to the line of the canal; therefore force is never justifiable, for it represents the endeavour to push the sound through the wall of the uterus. Occasionally the straightening of the uterine folds or canal is necessary, and is effected by catching the anterior lip with a sharp hook, and making slight traction. It is most safely done when the os is seen by exposure by the speculum, for the sound is then not tainted with vaginal secretion. It is seldom necessary to use it, and its introduction always produces some pain, and is not devoid of danger.

THE TREATMENT OF ENDOMETRITIS.

Theory of Treatment.—1. The first proposition, to insure free and permanent drainage by the uterine canal, is palpably necessary where there is deficient development in size of the external opening of the uterus, and in structural strength, compelling anteflexion at the feeble cervico-corporeal junction. It is not less essential in the virginal granular hyperplasia, which blocks the outer opening, in strong development with a large or small os, and in the endometritis coincident with lacerated cervix, for here too the inner os is apt to be tight, and the opening rendered valvular and constricted by the hyperplastic thickening of the cervical endometrium.

Such drainage can only be effected by the openings of the inner and outer os being free and patent, as well as the canal between and above them; and it therefore follows that the endometrium must be made healthy and the uterus lightened, so as to maintain an open canal, and permit the ready escape of the discharges. Thus are required the measures necessary for the removal of such hyperplastic growths as obstruct such openings and the canal.

The effecting of the first proposition of drainage may entail the enlargement of the canal, as well as the carrying out of the second proposition—viz. the producing a healthy state of the endometrium; of the third, the healing of all granulations of the os and cervix, removing connective tissue hyperplasia, bringing lacerated surfaces normally together, and thus reducing undue weight of the uterus; of the fourth, the supporting of the uterus; and of the fifth, the reduction to the minimum of abdominal pressure.

By such means alone can permanent drainage be gained, for the omission of any part thereof permits a speedy recurrence to much of the previous diseased action.

The mode in which drainage may primarily be induced is in all cases by enlargement of the canal where deficient in calibre. This may be done by cutting or by stretching; and without here bringing forward the deficiencies or injurious influences of cutting, it may be pointed out that it is wise, where possible, to follow the manner that Nature adopts, which is invariably dilatation; and, again, Nature, when she is able to effect pregnancy under the circumstances of the above difficulties, not infrequently cures them by the dilatation occurring in the subsequent labour.

Assuming, then, that dilatation is desirable, which mode is preferable? Here again Nature indicates, by the finger-like action of the membranes in labour, that a continuous circle, producing equal pressure at each point of its circumference, dilates in the best and safest manner; and this we should anticipate when we consider the matter theoretically and practically. In view of the fact that in effecting such dilatation it is well to act with all safe rapidity, that nothing is gained in this instance by the dilating medium being fluid, and that solid stems are in every way most convenient, it will be found that these effect the purpose in the readiest and most efficient manner.

2. The second step necessary to drain the Fallopian tubes, as well as to remove hypertrophic valvular obstructions at the inner os, and lighten the uterus, is the removal of the thickened

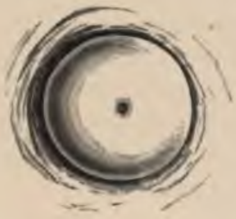
uterine lining membrane. It seems to me unnecessary here to argue as to whether such removal may be effected by some destructive chemical reagent or the actual cautery, preferring again to accept Nature's mode. As Nature removes the uterine lining membrane at the catamenial period and after labour, so may we mechanically, cleanlily, and practically, certainly clear away the débris by scraping, i.e. curetting, after which Nature will replace the diseased lining membrane by a normal and healthy growth.

3. The third step for drainage is the removal of all granulations of the os and cervix and connective hyperplastic thickenings, which, by their compression and eversion, impede the ready escape of the discharges, and induce, by their continued irritation, a recurrence of the closure from renewed induration, and the healing of the raw surfaces, as well in the virginal cervicitis as in the lacerated cervix. To effect this is it more desirable to employ chemical caustic reagents or the actual cautery, or rather to have accurately defined clean-cut surfaces by resecting exactly as much tissue as is desirable, and bringing together the healthy surfaces, which soon heal, whereby the parts are at once and certainly restored to the condition of their original formation, after the manner of the operation introduced so happily and effectively by Dr. Emmet? It seems to me that the latter course has everything in its favour; for, among other considerations, Nature habitually heals by simple cohesion healthy clean-cut surfaces, and they remain so united without further irritation; while, in the case of other forms of removal or destruction of tissue, healing can only be by suppuration with inflammatory actions, low in kind, slow in progress, and uncertain in results. Again, should such removal be effected by scissors or the knife? In the case of freshly lacerated surfaces it matters little with which the surfaces are vivified, and the central line corresponding to the canal may be left unremoved; but where inflammatory thickenings and induration have occurred, the tissue of the whole surface must be equally levelled, else the central uncut surfaces would remain as prominent ridges, indicating the site of the canal, which, pressing each other, would practically close that which should be a tube. To effect such removal I have found it most convenient usually

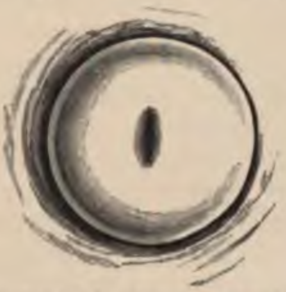
to pare the tissue equally, but according to the requirements of the particular case.

The latter part of the third proposition, the reduction of undue weight of the uterus, necessarily follows upon the successful performance of the above-mentioned measures. In the virginal affection the increased weight is due to the increased quantity of blood contained in the inflamed uterus, and to the inflammatory products; their removal, therefore, to a large extent relieves their result.

FIG. 100.



In an otherwise well-developed uterus the opening is apparently closed. The face is congested. The body lies rather to the right. The left appendages are enlarged, and are left posterior; the right less so.



After operation by resection the face is much larger; the opening is normal; the left appendages are just felt high to the left; the uterus is central, higher, and rather anteverted.

In the case of lacerated cervix with subinvolution the same consequences obtain, though the canal of the uterus may afterwards in some cases still remain a little long on measurement; but the walls are lighter.

4. The undue weight of the uterus having been reduced by the before-mentioned treatment, posterior displacements which are replaceable, particularly in the virginal condition, will fre-

quently be found to be cured by this lightening of the uterus and appendages, assisted by removal of abdominal pressure, permitting the uterus to reoccupy the axis of the brim. In this virgin state marriage is now desirable, when, pregnancy ensuing, normal development occurs, and the patient is cured. Should evolved disease have arrived at intermittent tubal contraction, it may be, however, that tubal, ovarian, or less probably abdominal extra-uterine fœtation may result. This, however, is not to be anticipated, and it is better for the patient to take the chance of marriage and its effects. Should marriage not be convenient, the sexual desire continuing and being unsatisfied, congestion may persist and its results evolve; nervous symptoms, debility, and anæmia result; and even insanity, usually of the sexual melancholic type, perhaps with religious or suicidal tendencies, may ensue.

CERVICITIS.

Prophylaxis.—The prevention of occurrence can only apply to the induced conditions—that is, to excessive coitus, the creation of eversion by excessive metrotomy, parous laceration, and the application of irritants. Excessive coitus is avoidable; excessive metrotomy unnecessary, injurious, and indefensible; laceration is to be prevented by the use of anæsthetics, or cured as soon as the part is fit for operation; the application of caustics is quite unnecessary, usually injurious, and seldom is of any benefit. Marriage and pregnancy will, in the early stage, cure those who suffer from their absence.

CORPOREAL ENDOMETRITIS.

Prophylaxis.—The prophylaxis in the virgin state is by the avoidance of abdominal pressure; with the normal os, marriage with the expectation of pregnancy; the prevention of obstruction to drainage by enlargement of the lumen of the canal where narrowed, and thus the avoidance of the formation of cervical, granular, hyperplastic tissues. In the parous, antiseptic midwifery, the avoidance of laceration by the use of anæsthetics, and assistance in due time given quietly and patiently, and the healing of lacerated surfaces as soon as possible. In the gonorrhœal, the prevention of the gonococcus entering the cervix. In operative procedures the use of antiseptic methods, the avoidance of undue force, of irritating modes of treatment, and of stenosis or closure of the canal.

In view of the likelihood of the tubes being affected and of the fimbriæ being adherent, the cervix cannot with safety be pulled down; whereby tubal effusion into the peritoneum may be induced, or the adhesions, which are probably vascular threads, torn apart. No irritating chemicals can safely be applied to the corporeal endometrium above the inner os, unless there have been previously such dilatation as guarantees the free escape of discharge. As no such dilatation can be effected without great pain, and usually not properly because of the pain when the woman is sentient, it is unwise to attempt it without the administration of ether. No such operation can be safely performed without immediate and due rest in bed, so that no such treatment should be undertaken other than when the woman will stay quiet, nor without a competent nurse to carry out the after treatment; a well-managed private hospital is perfection. The risk of peritonitis and ruin of the woman's future is too great for trifling. For the same reasons slow dilatation by tents is unsuitable and undesirable.

If a simple superficial division of the face of the cervix in the case of an otherwise healthy pin-hole os be made, it is common for the divided surfaces to cohere, and the original state to recur, so that nothing is gained; and similarly of the inner os. But if it be determined to perform metrotomy, it should be done so that the exact extent of the incision is controlled. This can only be so by the use of a single blade of Marion Sims' kind, in which operation the anterior lip is caught with a hook and placed slightly on the strain, and the blade of the knife is introduced and divides the tissues as far as corresponds with the normal size, first on one side, and then, by reversal of the blade, on the other. Mechanical spring metrotomes are quite uncertain; one blade may be sharper than the other; the inclination of pressure in pulling the handle may be greater on one side than the other; cervices vary in elasticity, so that they yield uncertainly before the knives; and also in thickness, so that what is a proper setting of the blades for a large is dangerous for a small cervix; and the two sides of the cervix may not offer a similar resistance; thus the cervix may be cut through and an extensive hæmatocele into a broad ligament be induced. It is a very uncertain and risky operation. If the incision, as with scissors, be carried through the lateral walls of the vaginal cervix, the divided circular muscular fibres retract, everting the lateral edges; and the longitudinal muscular fibres, now relieved of the opposing force of the central layer, pull the halves of the divided cervix upwards, everting the lower edges; thus the raw faces are exposed to vaginal friction and become granular, and the condition is similar to that of parous laceration, whereby the farther evolution of endometritis and higher disease is apt to be induced.

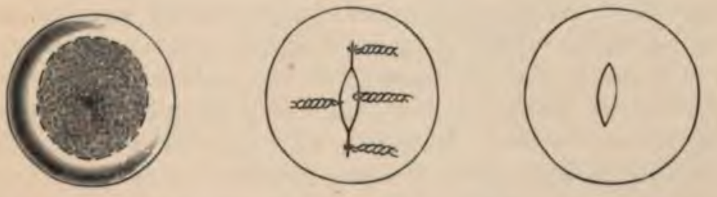
To dilate a minute opening is usually ineffective, for retraction to the original size almost always occurs. This operation does not correspond to the stretching by the child's head in labour, for no dilatation can be operatively practised on the non-pregnant cervix to this extent, and a No. 12 dilator is passed frequently with difficulty.

If subsequently an intra-uterine stem be introduced wit the object of keeping the divided surfaces apart, drainage may be obstructed, and effusion into the peritoneum through the fimbriæ, and peritonitis be produced.

To dilate and curette alone is perhaps to remove some prominent varicose or thin-walled capillaries which may have bled, producing menorrhagia; but not to remove the granular surface at the os is to leave it to be continuously frictioned at every movement against the vaginal walls; and hence irritation, congestion, hyperplasia, endometritis, leucorrhœa, debility, and reflex nerve affections continue and progress. The raw surfaces must be healed, and the method presently described is the most certain, safe, clean, and only definite one that is open to us. Women may decline it; and when examined later, perhaps after years, the same conditions, generally accentuated, persist, and they are finally exposed to evolving cancer. While operating at all, it is well to do so effectively and safely, and to produce a state as closely approximating to the natural as possible.

Treatment.—The vagina having been well syringed with a mercurial perchloride or iodine solution, the patient is etherised and placed on the side on a table, Sims' speculum introduced, and a double tenaculum is fixed deeply in the wall of the anterior lip; the sound is passed as a guide to the line of the canal, and Hégar's, or, better, Godson's and subsequently Hégar's dilators up to about No. 12 are passed in rapid succession. A small hollow-backed curette is then gently passed over the corporeal and cervical endometrium, and this is repeated according to its firm or hyperplastic condition. A double-channelled canula is introduced into the corporeal cavity, and the solution of mercurial perchloride is pumped through it by a Higginson's syringe, taking great care that no air enters, and that the fluid returns freely through the exit tube, and the vagina is well washed out. These proceedings have occupied about four or five minutes.

Fig 101



Virginal hyperplastic granular face about a small opening in an otherwise well-developed uterus.

The same after resection, with the sutures twisted.

The same after removal of the sutures.

The patient is now placed in Sims' position, and a single volsellum forceps grasps the healthy substance of the anterior lip, and gently steadies the cervix in its normal position in the vagina, without pulling it down. A pair of old-fashioned artery forceps, from which the spring has been removed, catches the granular surface to be removed near its edge, or the edge of a small opening, and an angled vesico-vaginal fistula knife is rapidly passed around the opening. In the case of the congenital pin-hole os, a gaping elliptical opening results, and a wire suture inserted through both surfaces at either angle, and one through the anterior raw surface in the midline, and another through the posterior, leave a rather large gaping opening and stop hæmorrhage. But if the face be granular from a congenital large opening with eversion and evolutionary granulation and hyperplasia from vaginal friction, or if the cervix have been lacerated with similar appearance and conditions, the whole of the surface of the everted granular hyperplastic tissue up to the healthy edge on the vaginal cervix is removed. Sutures are now introduced as above, but in greater numbers; they rarely exceed six in all.

All the sutures having been introduced and twisted, a strip of oiled silk, to which a thread is tied, is passed into the good-sized opening thus produced; the woman is placed on her back, and the vagina syringed with the perchloride solution; she is cleansed and put to bed. This has usually taken from eight to ten minutes to complete; the whole operation of dilating, curetting, syringing the uterine cavity, resecting, suturing, and syringing the vagina occupying from fifteen to twenty minutes.

In case of any subsequent rise in temperature or pulse, which is unusual, the cervix is examined with a carefully-introduced speculum, the sound is passed, and, should the walls of the opening approximate so closely as to obstruct drainage, a stitch, or one on either side of the median line, is removed. The vagina is syringed night and morning with the perchloride, and, after a time, boric acid solution.

In a week the woman is placed in Sims' position, Sims' speculum introduced, the sound passed and gently pressed against the median sutures which passed through both lips, so as to separate any undue cohesion of the canal, and the sutures are then painlessly removed with the suture cutter. It is desirable that a second week should be spent in bed, and a third week in gently moving about.

The results are the production of a perfectly normal os; but it occasionally happens in large operations of this kind that cohesion and contraction of the central pared tissue may continue and require slight dilatation with forceps, or even a nick with a Sims' metrotomy knife of cicatricial tissue at the opening; but this only results from the opening being too small from an undue approximation of the inner sutures which passed through both lips, or on the part of the patient from neglect to attend, or refusal to permit the slight separation of the lips required.

Thus, whether the os have been of pin-hole or excessive size, with or without granulations, a normal opening is produced, and the endometritis, marked or slight, is cured.

Next, every opportunity of enriching the blood with a view to improved nutrition is to be seized, and this is to be attained by arranging the meals at regular and suitable intervals, allowing due time for digestion of each, and avoiding the taking of heavy lunches between them, which of themselves require considerable time and power of digestion. The quality, too, of the food is of importance, remembering that this climate is usually warm, and that heat-producers are less suitable than in cold regions. Thus, while the starches and sugars in excess may be requisite and suitable in countries where the system has to make much heat to maintain its temperature, in an atmosphere of comparative warmth, as in Australia, there is no such burning up of fuel to this end required. The most marked example of this habit is the taking of porridge by the Scotch and Northern Irish, who do not realise that this is the diet of the inhabitants of northern cold countries, as the Scotch, Irish, Norwegians, Swedes, Danes, Finns, and Russians, to the conditions of whose native countries ours are not even allied. The diet which here appears best to effect the end of repairing the debilitated blood, and through it of the tissues, is animal; a diet, of which the absorption is effected by creatures of the smallest digestive powers, as of milk by the young of animals; and in the case of carnivora, among which we, as shown in part by the formation of our stomach and teeth, rank, by their digestion through the medium of stomachs small in comparison with the manifold digestion of the graminivora, as cattle, which chew the cud and have more than one stomach.

Animal food may be taken three times a day at meals at suitable intervals, such a meal to consist of eggs, fish, meat, game, rabbit, hare, tripe, sweetbread, calf's head, sheep's head, or such like. Between these meals may be taken from one to two quarts of milk or some beef-tea. I would suggest as an example the following:—On waking at 6 or 7 A.M. a glass of milk. Between 8 and 9, breakfast; animal food as mentioned above, ordinary stale bread or cold dry toast and butter, and a cup of cocoa or coffee made with milk, not too hot. At 11, half or three-quarters of a cup of good beef-tea or soup without bread. At 1, dinner or lunch of animal food, easily digested vegetables, and a milk pudding or stewed fruit. At 3 or 4, milk or coffee made with milk, or a cup of cocoa. At 6 or 7, dinner or tea, as lunch or breakfast. At 9 or 10 P.M. a cup of beef-tea or soup with bread, milk, or a cup of arrowroot or other farinaceous food made with milk. Stimulants are very dangerous to these patients. They are not necessary, and it is most easy to induce confirmed alcoholism; but if habitual a glass of wine or ale may be taken with lunch or dinner, or both, but not between meals, and certainly not spirits. Not less than from nine to ten hours should be given to bed at night, and the woman should lie down for an hour after the lunch or dinner from 2 to 3, and sleep or rest. She should go to bed not later than 9 or 10 P.M. For exercise, a stroll of a quarter or half an hour should be taken between 11 and 1, and of an hour or so between 3 and 5, or later according to the weather. A hot bath on rising in the morning at such a temperature as is comfortable according to the weather, but never cold, is desirable, and she is not to lie in it and soak unduly. The body is to be protected from external influences by woollen chemise and drawers, or combinations, especially Dr. Jaeger's, in the winter; and suitably in the summer, according to the locality. As to drugs, the whole tendency being in the direction of debility, the only indication is in the way of tonics, unless the temperature be raised by the presence of an evolutionary acute inflammatory attack. Thus, in the former case, preparations of iron and quinine are desirable; in the latter, essentially rest in bed, and perhaps sedatives in small doses; but frequently quinine in large doses best meets the condition, though in this state the cause of the inflammation being usually the outpouring of an irritant fluid into the peritoneal cavity, or septic absorption, the individual condition must be primarily considered, and perhaps treated by operative measures. In persistent cases of debility, nervous or general, the Weir Mitchell treatment may now be indicated. By the above strengthening measures the body will be increased in weight and power, unless the diseased conditions be so progressive as to effect a waste of tissue beyond the possibility of their influence, and outweigh them in the balance of waste and repair.

THE TREATMENT OF GONORRHŒA.

Prophylaxis.—Prevention, primarily, is to be effected by the healthy not sleeping with the diseased; by avoiding contact and the use by the former of cloths or clothes infected by the latter, and by care at closets; medically, by the perfect cleanliness of instruments.

Secondarily, the bacillus is to be prevented from entering the uterine cavity; for, when once there, it probably continues its course into the tubes with permanent evolutionary injury. And the third indication is to destroy them in the vagina.

Treatment.—The passage of the bacillus into the cervix is to be prevented by placing a little pad of cotton, soaked in glycerine, against the os, and a long thin pad of cotton, soaked in a 1 in 1,000 solution of perchloride, extending from the glycerine pad to just above the vaginal sphincter. The woman also injects the vagina through the short nozzle with a pint of the perchloride solution, and later, not so strong, three or four times a day; so that while the cotton in the vagina is soaked, its arrangement of forming a layer between the anterior and posterior vaginal walls is not displaced. The cotton is preferably changed daily.

It is well to give half-drachm doses of perchloride of iron three times a day, as the bladder is also commonly infected; and it may also be washed out with a boric acid solution. Subsequently a solution of potassium permanganate may be injected. Should the disease be limited to the vagina, the woman is well in two or three days; but it may be reinduced by auto-infection from the bladder, and particularly from the uterus, when the bacillus has already ascended into it or the tubes, which appear to emit the collecting discharge at intervals from tubal retention, from puffing of its mucous membrane causing obstruction, whereby the vaginitis is recurrent, and this is a source of great trouble.

When affecting the endometrium in the chronic state it may be useful to curette and disinfect with perchloride; but the cavity is generally reinfected from the tubes, to which the disease has certainly previously extended.

The treatment of tubal disease is considered later.

THE TREATMENT OF THE GRANULAR OS.

Prophylaxis.—The prominent influence of a granular os—which, as distinguished from parous laceration, which is elsewhere considered, is here regarded as of virginal origin—is the persistent irritation produced by its constant friction on movement against the vaginal rugæ. If these cases be treated by glycerine pads, on alternate days, for from three to six months, the condition is relieved, for vaginal friction is hindered, and thus congestion is reduced; but on its cessation the original cause and friction exercise their influence, and the condition recurs.

If the treatment be adopted of six or twelve months reclining in bed or on a couch, friction and abdominal pressure by stays of the granular face against the vagina are for this period avoided, and epithelium may grow from the cervico-vaginal layer, to some extent, over the surface from which previous friction removed it. This, however, does not cure the original causes of the inflammatory action which rendered the epithelial removal possible, and these persist. On return to ordinary exercise, therefore, it is usual for the friction of the surface to rub off the newly-formed epithelium, and the old symptoms recur.

Nor can the application of caustics produce a better result, since they but increase the extent of raw surface, and do not finally render it less irritable, but tend towards the increased production of connective tissue hyperplasia, which was previously present in some degree. The combination of long rest, with the application of caustics, does not remove the hyperplasia, nor the endometritis that is always present. The application of the actual cautery with prolonged rest may destroy the irritable face, and induce contraction; but it is a long and serious proceeding, uncertain in its extent and effect.

Treatment.—The treatment by dilatation and curetting for the endometritis, and by removal of the granular face by resection, gives the same advantages as in the lacerated cervix, and is as applicable to the congenitally small opening, with granular hyperplastic cervico-vaginal face, as to the congenitally large os, with everted hyperplastic tissue, and granulations extended therefrom by inflammation and friction against the vagina. No other mode cleanly removes the hyperplasia, which is always present.

This treatment quite cures many, particularly if marriage then take place, or the woman be married, when pregnancy is highly probable, and is desirable, whereby cure of coincident retroversion, and apparently of moderate peritonitic adhesions, frequently results. But, even though married, if the tubes by evolutionary disease be adherent, the irritation has been removed, and the symptoms are relieved and usually cured.

If marriage cannot be effected, and sexual instinct be well developed, the sexual congestion continues, and the result is relief, and not cure.

The depressing injurious influence of stays is very marked in these conditions, facilitating friction by downward pressure of the uterus, and thus of the face of the cervix against the vagina.

THE TREATMENT OF LACERATION OF THE CERVIX UTERI.

Prophylaxis.—The prophylaxis consists in the removal of the conditions which induce lacerations. Thus the congenital minute opening may be made normal, virginal connective tissue hyperplasia removed, and the face healed.

In all cases of rigid cervix in parturition, laceration is imminent. The administration of chloroform, slight, intermittent, but intermittently persistent, diminishes the violence of the uterine contractions, the cervical muscular spasm, and the sense of pain, so that dilatation gradually occurs, and the presenting part passes. Similarly with the application of forceps. I think chloroform is given far too rarely in instrumental delivery, both with reference to risk of cervical and perinæal laceration; with the production of pain the progress is hurried, dilatation defective, laceration is apt to be induced, and evolutionary diseases result.

A tight binder is not to be applied; but a well-fitting abdominal bandage with straps, never to effect compression, but to support the abdominal walls and assist their involution.

In the parous state the lacerated cervix is, as soon as the part is fit, to be restored to the healthy normal condition, when the following labour will not extend the tear through the hyperplastic undilatable tissues.

Treatment.—The mild cases of the first degree require no treatment, unless it be for septic evolutions. In the more serious, the endometritis is to be cured, the subinvolution relieved, and raw surfaces with eversion and granular hyperplasia are to be restored, as described in the treatment of endometritis, to the normal state, when evolutionary affections will tend towards health, except so far as the damage done to diseased and adherent tubes and ovaries is irremediable, unless by their removal.

Lacerations occurring in every degree, opinions vary as to whether they shall be healed or not. It should only be uncertain as to those cases where the laceration has not extended through the lateral wall of the vaginal cervix; for in these, with their raw-beef granular eversions, there should be no doubt that it is not good that they should rub against the vaginal rugæ. But even as to these there is difference of opinion.

First, then, as to lacerations extending through the lateral walls of the vaginal cervix in some degree, whereby the torn, circular, muscular fibres retract the lateral edges, and the longitudinal draw up and evert the inferior edges. In the preceding pages it has been desired to prove that granular states of the cervix are a cause, or a cause of continuance of endometritis and superior evolutionary disease; and if this be so, the women suffer and desire treatment; but whether they suffer or not is comparatively immaterial as to the necessity of healing the part; for, besides the evolutionary diseases which may or may not produce acknowledged symptoms, cancer may ensue at any time. The question for consideration then is, firstly, how can they be healed in the safest and easiest manner?

If the glans penis and urethra of a man were by some accident so split that the raw faces of the wound rubbed at every moment against the legs or clothes, would it be thought wise to send him to bed or make him lie on his back for six or twelve months to avoid this friction; or to apply the actual cautery or caustics at frequent dates to a surface which can but rarely skin over, because the friction rubs off the advancing epithelial cells as fast as they are formed; or, assuming that with such rest, and with or without such actual cautery or caustics, the epithelial cells could be induced to cover such a lacerated, deformed, and bifid surface, would the man be satisfied with the result? But, in the case of the man, the position is not that of progressive evolutionary disease which may render him a constant invalid or kill him; but that he is rendered comparatively unfit for connection. Much more, then, in the case of a woman do these arguments apply, whose general system, capacity of normal cervical dilatation in labour, and marital happiness are thus frequently undermined. The only safeguard of the above treatment is that the woman and her friends cannot see her granular deformity.

On the physiological and pathological grounds that the cervical canal is not intended to be openly exposed to the vaginal secretions; that a granular cervical surface is not intended to be rubbed at every movement against the vaginal rugæ; that pressure against the angles of eversion is abnormal and irritating; that there is production of connective tissue hyperplasia by the irritation of the above friction and pressure on the angles; that in an ensuing pregnancy such cervical disease is liable to create such superior irritation that abortion may result; that such split and hyperplastic structures are unfit for due expansion in labour, are likely to lacerate still farther, become septic, and produce puerperal inflammation; that such continuous granular surfaces promote evolutionary superior disease; that the constant formation of inflammation cells thrown off in the form of discharge creates an undue drain on the system, undermines its strength, and, finally, may lead to such degeneration of cell formation as results in the amœboid cancer cell in the part itself, or in that part of the vagina against which it rubs: on these grounds it seems to me to be just to conclude that it is necessary that granulations should be healed, and the part restored to its normal form.

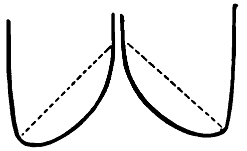
In the case of the lesser lacerations, in which the split is an extension of the face of the cervix, but has not passed through the lateral wall of the vaginal cervix, if the torn surfaces have healed and there is no evolutionary disease, no treatment is necessary. But if the cervix be congested, the edges œdematous and granular, and there be endometritis and perhaps uterine misplacement, and thickening of the tubes, or the probability thereof, the granular surfaces and edges then also require to be healed.

Nor to my mind can there be two opinions as to how they should be healed. If the mouth were split half-way or completely through the cheek, and failed to heal by first intention, and gaped for three months, would the edges be burnt with caustic or the actual cautery; absolute rest be enjoined, and the patient be required not to eat, talk, or laugh for six months, with the expectation that the half skinned over, hyperplastic edges would cohere? Or, rather, would a knife be run round and pare the edges, and the vivified surfaces be brought together by stitches in the normal position? Of course the latter, and successfully; and so in the case of the lacerated cervix; life is too short and active for such permanent disablement over an easily remediable trifle. That these operations require neatness of manipulation and experience applies equally to those of the eye, and for hare-lip; it is no argument against the necessity and propriety of their performance.

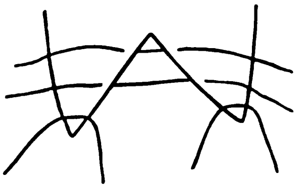
But the laceration may extend so deeply into the vaginal junction as that in the paring, however carefully performed, the uterine artery may be divided and the vagina is instantly filled with blood, and it may spurt over the face of the operator. Much coolness, skill, and rapidity of action are now requisite to catch and control the artery with Péan's long-pressure forceps, so that a long curved needle previously prepared for the exigency, the possibility of which in the particular case had of course been foreseen, may be passed over the divided artery, and the suture constrict it. This is occasionally exceedingly difficult, where a very deep laceration has healed with high retraction of the connective tissue of the broad ligament; and the cervix, perhaps, cannot be drawn down at all.

In operating for laceration of the cervix it is as essential to dilate and curette for the cure of the endometritis that is habitually concurrent or caused by it, as it is in endometritis to remove the granular surfaces as well as curette. Dilatation and curetting are performed, and granular tissues are removed by paring as described in the treatment of endometritis. But

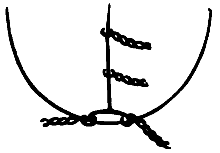
Fig. 102.



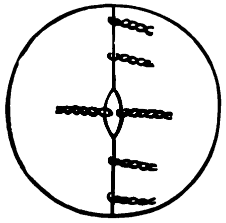
Coronal section of lacerated cervix with convex hyperplasia, showing the lines of excision.



External lateral aspect of cervix after incision, showing the situation of the sutures, which are sunk deeper in the structures than is here shown.



The same after twisting of the sutures.



The same, giving the aspect of the face.

it is most important that the uterus should not be pulled down, because of possible tubal adhesions; and for the operation it is quite unnecessary, and cannot be other than to some extent injurious, straining the ligaments and pelvic fascia. It is necessary to remove the tissues quite to the normal edge of the lip, or connective hyperplastic thickening will be left for future friction.

Usually the operation may be performed in less than ten minutes, but occasionally it is prolonged by complications; thus very extensive lacerations may require more stitches; and hæmorrhage is very free in some cases, when rapidity of manipulation is desirable. Also, the result should be a perfectly normal face with a natural opening, and no sign should remain of the groove where was the laceration; even the stitch marks vanish, so that there is usually no evidence of an operation having been performed. The cervix becomes pale, the opening is normal, and the uterus is lightened. If the operation be inefficient, the patient is relieved, but is not cured.

Should the opening be left too small, which should not happen, it may be necessary to dilate it with dressing forceps; or a nick may be made in either end of the opening, and slight dilatation be repeated occasionally. Pregnancy is very probable, as the organ is rendered healthy, unless it be prevented by diseased tubes. In case of pregnancy with such a small os, it is well to be prepared, in case of absence of ready dilatation, with a small sponge-tent, which enlarges the opening just so much as to facilitate the action of the membranes, and the labour then proceeds normally; it is very seldom necessary. It is rare for laceration to recur in parturition when the faces have been solidly brought up against each other; if the parting of the surfaces have been shallow, the union is superficial, and of course yields. But should it again tear, it usually heals well; and no such irritation is produced as in the original case, for the hyperplasia was removed.

It is very remarkable to how great an extent the evolutionary affections are relieved by this removal of granular faces from vaginal friction. Thus, with retroflexion, extensive disease of the tubes, and general matting of the uterus, tubes, and ovaries, all the symptoms frequently subside, and the patient becomes quite well, except, perhaps, for occasional dysmenorrhœa, when a Graafian follicle becomes much distended in its endeavour to burst the envelope of the ovary, previously thickened by evolutionary tubal effusion and peritonitis. Ovarian atrophy frequently occurs, which is the happiest termination, for in such cases pregnancy is impossible.

In my experience too much cannot be said in favour of the healing of lacerations and removal of hyperplastic tissue by some mode after Emmet's method; nor of its safety, and the absolute need of such restoration to the normal. If women could see themselves, they would always require it to be done.

THE TREATMENT OF LACERATION OF THE PERINÆUM.

Prophylaxis.—The preventive treatment consists in controlling the passage of the child through the lower vagina, so that dilatation may be gradual. In a normal first labour with good pains it will be found that two hours usually pass between the full dilatation of the cervix and passage of the head through it, and it may, therefore, be assumed that Nature indicates this as about the time required for healthy dilatation of the vagina and perinæum. Should the head pass in a period much less than this, it is frequently with perinæal laceration.

There are two main conditions in which such a reasonable period is curtailed. The first is in precipitate labour, or where the patient is permitted or incited to exert her voluntary muscles of expulsion when the perinæum is extensively dilated, so that the child is forced through with laceration; and this particularly when it has become very thin, as in the rigid perinæum, or in the last pains with normal dilatation. The second is when the head is delivered with forceps. Remembering the period required for dilatation in normal labour, the perinæum is to be exceedingly gradually expanded with the forceps on the head. If half an hour be given to this process, it is but a fourth of the ordinary time, and is very quick; but how often the head is brought through in much less! Nature is to be imitated in this matter. Also, the perinæum is to be duly supported as advised by Playfair or Goodell; and the head not be permitted to rest on and unduly prolong the state of distension of the lower vagina, when Nature has shown her inability to complete the birth unaided. In all such cases of forceps delivery, chloroform is indicated to assist perinæal relaxation, and permit quite slow expansion with the forceps.

After the child is born the perinæum should be examined, and if there be laceration beyond the fourchette, sutures should be introduced.

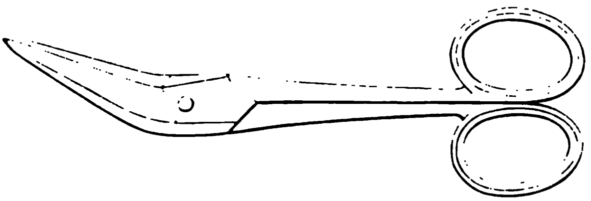
A tight binder, especially after the first few hours of parturition, tends to prevent early retraction of the musculo-elastic-connective structures of all the pelvic organs and their supports and attachments, which must be of intense importance; for if this be hindered it may be long delayed or largely prevented, and subinvolution ensue. As six weeks are required for involution, active exertion, abdominal pressure, and the use of stays other than with a union by tape loops are to be avoided. The results of vaginal descent are apt to be so lifelong and serious that a little care in and after parturition is invaluable.

With laceration of the perinæum, no pessary, unless of undue size, can be retained for probable relational descent and retroflexion of the uterus. Such a pessary prevents contraction of the vaginal fibres, stretches all the structures in the neighbourhood, and finally increases and renders contraction hopeless without operation.

Treatment.—In case of any degree of laceration beyond the fourchette, it is necessary to introduce sutures. Two fingers are placed in the rectum, and the point of a handled, well-curved needle—Lüers' is the most convenient—is passed beneath the raw surface from one external edge to the other; silver-wire is passed through the eye and drawn through, and so two or three, according to the length of the tear. After careful cleansing with cotton, the wires are twisted. On the following morning the twists can be reversed, and retwisted more loosely, and the tension lessened without affecting the cohesion of the surfaces, whereby constriction is relieved, but support is still afforded. If the parts swell, this loosening may be repeated. The sutures are removed in a week or ten days. Sutures are best inserted under the influence of chloroform as soon as the uterus has well contracted; but it is better to have delayed the progress of the head in the latter pains and to have avoided the laceration.

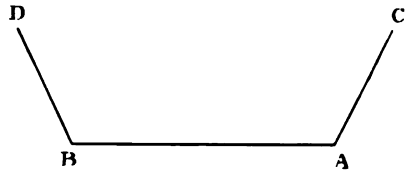
Should immediate cohesion of the torn surfaces, however treated, not occur, it is necessary to wait until cicatrisation is quite strong, and the structure has attained to a healthy state, before attempting an operation, which may be in from three to six months, according to the extent of the injury. The patient, being otherwise in good health, is prepared for a few days before the operation by free action of the bowels. Under ether, endometritis and cervical laceration are treated as before described. A week later, the bowels having been kept free and the diet having been light, under ether the cervical sutures are removed, and the uterine opening seen to be normal. The vagina, previously syringed, is swabbed out with corrosive solution (1 in 2,000), and perinæorrhaphy is performed. Many operations have been introduced, some of which are specially adapted to peculiar conditions; but the most generally suitable is the creation of flaps after Tait's method, on account of the rapidity of execution, the slight blood-loss, the strength of the resulting perinæum,

FIG. 103.



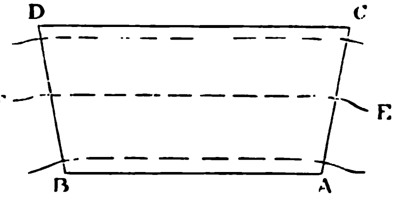
Scissors for flap-perinæorrhaphy.

FIG. 104.



Lawson Tait's flap-perinæorrhaphy. In rupture, in first and second degrees, lines of incision.

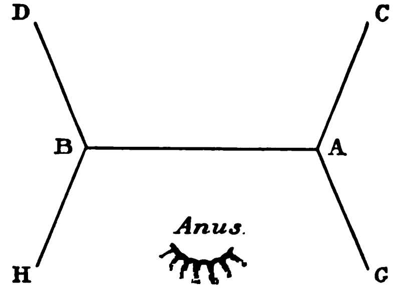
FIG. 105.



Appearance when pulled out laterally.

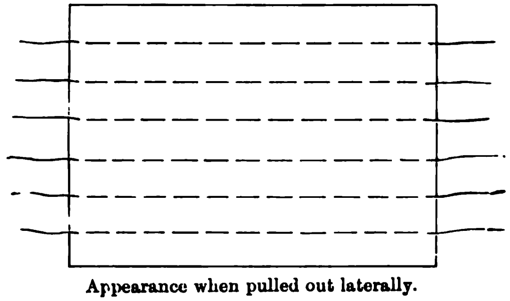
the certainty of success, and the safety. With the woman in the lithotomy position, two fingers are introduced into the rectum, one point of a pair of angled scissors is introduced into the left-hand edge of the recto-vaginal septum, A (fig. 104), in the middle of its thickness, so that each flap may be of due thickness. The septum is thus well split from A to B to the depth of half to three-quarters of an inch, whereby two raw flaps are created. At the left-hand end, A, of this transverse section the point of the scissors is again deeply introduced in the direction of, and under the inner border of the left labium, AC, and the tissue divided; and similarly on the other side from B to D. When the parts are well pulled out laterally, and the upper flap upwards, an oblong raw surface, CABD (fig. 105), is seen, of which the line EF is the base of the first section. A well-curved Lüers' needle is then inserted one-eighth of an inch from the edge of the skin, and passed under the raw surfaces in the direction of the black lines indicated in the diagram to

FIG. 106.



Lines of incision in complete rupture.

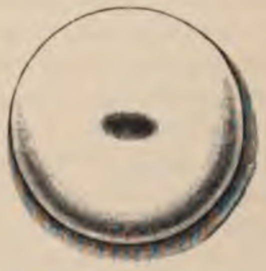
FIG. 107.



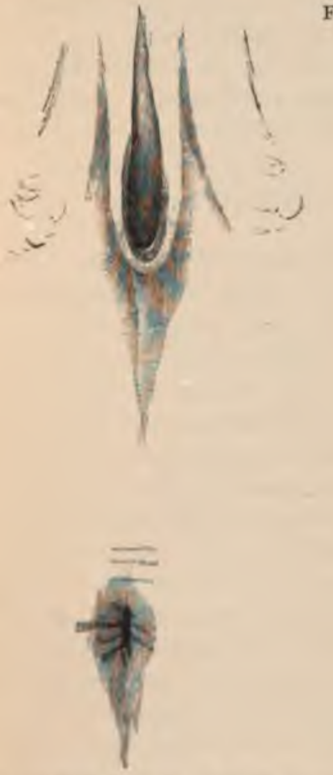
Appearance when pulled out laterally.

a similar point on the opposite side. Through the eye of the needle silver wire or catgut is passed, and the needle withdrawn. As many sutures as are required are thus inserted. The raw surface is cleansed, a perforated shot is passed over the sutures, then a spiral of silver wire and another perforated shot, which is compressed.

FIG. 108.



The cervix after operation.



The perinæum of fig. 35A after operation by Tait's flaps.

If the laceration have extended through the anal sphincters, the preceding sections are made; and, in addition, one at each end, A G and B H (fig. 106), posteriorly, deeply into the tissue to the level of a transverse line crossing the posterior border of the anus. A similar oblong or square is produced, and the sutures are similarly introduced. Adaptations are necessary to meet the demands of special conditions.

The result should be perfect; there should be complete control over the fæces, and the perinæal body is restored; laceration should not recur in subsequent parturition. No pessaries are to be introduced.

In laceration of the second degree, the bowels may be made to act on the third day by a dose of castor oil followed by drachm doses of sulphate of magnesia with syrup of ginger every four hours. In complete rupture, the action is better delayed till the seventh or eighth day by an occasional opium pill. The diet should be very light, avoiding much milk, that the stools may not become hard and scybalous.

THE TREATMENT OF SUBINVOLUTION.

Prophylaxis.—First it is necessary to mention the extraordinarily injurious influence of a tight and badly-fitting binder in parturition, whereby the uterus is forced down, the circular muscular fibres of the dilated uterine opening kept expanded by the depressed and everted swollen cervical tissue, the vagina thus prevented from contracting, and the whole pelvic fascia and the uterine ligaments maintained in a stretched condition; the relations of the tubes are also affected; and, in consequence, it is not infrequent to have the temperature raised by a degree or so; and, subsequently, to find a moderate laceration of the cervix which otherwise might have healed, everted granular tissue, a retroflexed uterus and adherent tubes, with general subinvolution. It may be convenient immediately after parturition, in view of the deficient contraction of the civilised uterus, to apply the binder tightly to prevent hæmorrhage and uterine expansion; but every indication is against its tightness being continued beyond the first few hours during which there is such danger; after which a properly fitting abdominal belt, made of duck with plaits and gussets and three or four straps and buckles, supports the stretched walls, and assists their involution and the restoration of the figure. The patient desires it tight, and the nurse wishes to meet her views; these opinions have to be counteracted.

Subinvolution being a disease of deficient recovery after parturition, there are two main systems of treatment which are specially undesirable. The one to accustom the woman to the use of sedatives, whether morphia, bromide of potassium, or suchlike, for the relief of her cerebro-spinal neuralgias which arise from granular irritation and debility, whereby her appetite, digestion, and intestinal action, and the general and special muscular contraction is still more enfeebled, and the condition is exaggerated.

Another plan leading to most serious results is the advice to take alcohol in any form when feeling weak, faint, or hysterical. The habit grows, and a chronic inebriate appears who rarely recovers.

The matter of pessaries is considered at length under retroflexion: they are usually illogical, injurious, and rarely of service.

Treatment.—The first necessity is to remove the associated affections, which have indeed usually been the original cause as well as the source of the persistence of the subinvolution. Therefore the endometritis is to be treated by curetting as before described; and it is essential that all granulations and eversions from laceration should be at once healed by Emmet's operation of paring, or by some modification thereof; for the operation must necessarily be adapted to the condition, as described in the treatment of the congenital deficiencies of development of the uterus. As before mentioned, only to curette and not to pare, unless where the os is absolutely normal, is not to cure because of vaginal connective tissue hyperplasia, and friction on subsequent movement.

The system demands restoration by every means possible, without alcohol, as described at length under the treatment of endometritis. Pregnancy and all undue waste are detrimental. The dress requires to be adjusted to the normal form of the body, without pressure or weight on the abdomen. An abdominal belt to support the abdomen, not to depress it, or combined stays and belt may be necessary.

Tonics, as iron or quinine, or in combination, are desirable. In case of continued deficiency of contraction after the performance of the above operations, which is unusual, or of menorrhagia, ergot is indicated, but it is seldom necessary.

THE PROPHYLAXIS OF ANTEVERSION AND ANTEFLEXION.

Prophylaxis.—The accentuation, if not the cause in some degree, of all cases of malposition being abdominal pressure, subsequently assisted by collection of rectal fæces, these are to be removed; in the former case, by ceasing to wear stays, or by their being so loose as to fit the body without compressing it. Also the skirts and petticoats should be carried by the shoulders, so as not to weigh upon the abdominal walls.

The rectum is never to be allowed to retain fæces. Thus daily after breakfast, unless a free and complete action has occurred, a drachm of glycerine may be injected into the rectum; also, at any time when the sensation of possible rectal passage is present, it is to be at once responded to; should this not be possible at the moment, and the capability presently have passed, at the earliest possible opportunity the glycerine is to be injected and the stool passed; for it is there, and must be tending to produce or accentuate a misplacement.

In treatment there are three things to avoid. The intra-uterine stem, which tends to irritate, inflame, and block the canal, and thus to create tubal disease and its evolutionary results; for though the tube may be pervious, its lumen is so minute that it is soon closed by the mucus of irritation. It is true that a stem may be worn by a woman with amenorrhœa, for the uterus is, temporarily at least, atrophic; but even then it may produce pain, and in case of flexion slip out of the body of the uterus, when the irritation induced has removed its causation. It usually causes or increases endometritis.

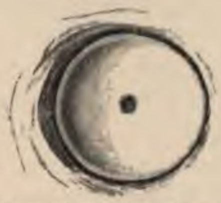
A straight Hodge's or Greenhalgh's ovoid pessary having its base at the lower anterior vagina, and its upper limb pressing into the posterior vaginal roof so as to lift it, necessarily draws the posterior vaginal attachment of the cervix with it, and thus tends to raise the uterus, pull the cervix backwards, and straighten the canal. It does not, however, treat the cause, and is open to the objections to pessaries presently to be mentioned, and is not necessary.

The third thing to avoid is division of the cervix through its posterior wall, so as to create a line of canal through the cervix, opening out at the posterior cervico-vaginal junction. It is unnecessary, and, in my experience, is ineffective and injurious; and in case of labour would give grave anxiety of posterior uterine laceration into the peritoneum.

THE TREATMENT OF ANTEVERSION.

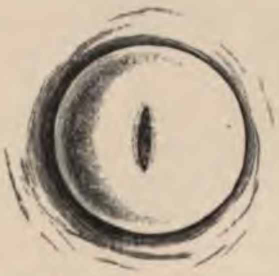
Treatment.—In the virgin state, when the os is normal and the uterus rendered horizontal by abdominal pressure, it is enough to relieve the latter, and the normal position will presently be sufficiently restored for comfort and health.

FIG. 109.



Virginal conical cervix, and pinhole os in an otherwise strongly developed uterus.

Anteversion of the same.



Virginal normal face and opening after resection.

The stays are to be brought to the form of the woman, and the weight of the skirts is to be carried by the shoulders, particularly in fat girls, when the uterus may assume the normal position. If the abdomen be pendulous, an abdominal belt, firm over the pubes, and loose at the upper edge, may be worn, or a combination of stays and belt. The object is to hold up the abdomen, not to compress it.

Marriage and pregnancy are desirable.

Anteversion is not an important malposition in itself; but if it be caused by a small opening or a granular cervix of whatever kind, these require their own treatment, when the version will be relieved and immaterial.

Where the opening is small, it requires to be enlarged and the endometrium curetted. Should also the face be granular, it is to be resected and a normal opening produced.

In the post-parous condition the endometritis is to be cured by dilatation and curetting. When the opening is normal, this cures; but when the cervix is lacerated, the faces, which are generally granular, require bringing up, else a pressure is produced on the angle of laceration against the posterior vaginal wall, frequently also with resulting irritation on the connective tissue of the broad ligament.

Removal of abdominal pressure is necessary in all cases.

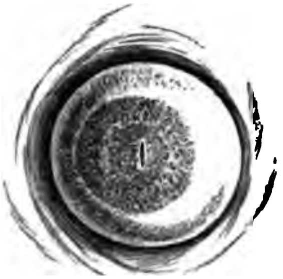
THE TREATMENT OF ANTEFLEXION.

Treatment.—In virginal anteflexion, the os being of normal size and appearance, the removal of abdominal pressure and rectal fæces is sufficient; but marriage and pregnancy are desirable.

When the opening is small in an otherwise well-developed uterus, dilatation and slight curetting are needed, and the formation of a normal opening; hyperplastic granulations require resection. In some of these cases rest in bed in the dorsal position under any non-injurious treatment permits relief to puffing of the opening and at the angle; and in marriage pregnancy may ensue.

In the congenitally deficiently formed uterus with small cervix and pinhole os it is usual that the cervical junction is also feeble, and tight anteflexion is common. The flexion being accentuated by the difficulty of escape at the os as well as at the angle of flexion, it is necessary that the openings be rendered normal, as before described; and it is common that thereby the structures seem to be so improved in strength as that the

FIG 110.



Virginal well-developed, but anteflexed uterus with very small opening and rubbed raspberry granular face and areolar hyperplasia compressing the lips.

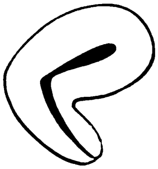
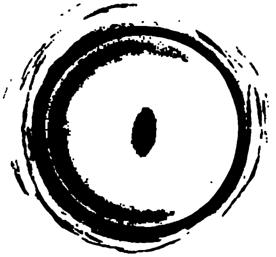


Diagram of anteflexed uterus. The cervix is anterior, the body normal.



The same after operation by resection.

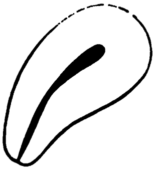


Diagram of the same uterus after operation.

canal is sufficiently straight. Should pregnancy occur, the flexion ceases.

Occasionally in this causation the anterior attachment of the vagina to the anterior vaginal cervix is so short that the cervix cannot fall back; this may be met by dividing the anterior vaginal roof and suturing the divided membrane laterally—that is, in the contrary direction to the line of division, whereby the attachment is lengthened.

In the parous, if the opening be normal, there must be either corporeal descent from abdominal pressure, relapse to the position of virginal anteflexion, or subinvolution.

The treatment, as always in misplacements, is the removal of abdominal and rectal pressures, the cure of endometritis by dilatation and curetting; and if there be a virginal granular face, or laceration have occurred, and especially with granular face, and not rarely even when the vaginal epithelium has grown over it, the hyperplastic tissue requires removal by resection, and the lips are to be brought up together so as to be absolutely normal.

In all these cases rest on the back in bed during this treatment tends to replace the organ.

THE TREATMENT OF RETROVERSION AND RETROFLEXION.

Prophylaxis.—It is probably correct to say that the regular treatment of posterior displacements of the uterus is to endeavour to replace them, and to introduce a pessary which is usually of large size, because a smaller one does not suffice, apparently on the assumption that the misplacement is a disease instead of an evolutionary condition, and that rectification will cure it. By previous considerations, detailed above, it is shown that these malpositions result from, and are sympathetic of, certain causes, and it is these causationary affections which have to be treated; and on their removal and cure the misplacements are quite a secondary matter and usually comparatively unimportant, unless accompanied by irritating adhesions, which are not cured, but are accentuated by a pessary.

The states apparently requiring such support are perpendicularity, and, in a more advanced stage of evolved disease, retroversion and retroflexion. The degree of success possible is dependent on the cause: thus, in the virginal condition, on the absence or presence of a small opening with or without a granular face with connective tissue hyperplasia; in the parous, of laceration of the cervix with everted faces, hyperplastic and granular, or over which the vaginal stratified epithelium has spread, and of consequent endometritis, virginal or subinvolutionary; of inflamed, contracted, or adherent misplaced Fallopian tubes or ovaries; of peritonitic adhesions binding down the fundus in the backward position; and on the degree of subinvolution and laceration of the supporting structures of the pelvis and its floor, particularly the perinæum, and thus of the pyramidal form of the vagina, as well as on the absence or presence of displacing tumours; for the raising power of the effective pessary must be greater than the descending weight of the uterus; and if the vagina cannot, by its pyramidal form, afford a sufficient base for the pessary, it is incapable of affording the support necessary.

Should a treatment of reposition and of hard pressure, as by pessaries, or by dragging, as by shortening the round ligaments, be adopted in conditions of such inflammatory complications, it follows that there is a pressure or tension on inflamed hypersensitive parts, which can but increase the disease and evolve new dangers; if in cases of marked deficiency of support, they are ineffective and injurious.

And first about pessaries. It is necessary to make apology or excuse for depreciating a treatment which appears to be so generally accepted as correct; but, perhaps, as an apostate from complete faith in pessaries, one's views may be permitted to be expressed with some strength and outspokenness. Nor have these opinions been gained without great experience, every opportunity of their use, prior intense belief in their necessity, and perhaps some capacity of their manipulation. Very many years ago every known pessary of every size in America and Europe was imported; and the writer, from absence of effectiveness of these, invented new ones, and had them made of all sizes; these also were ineffective, and for the reason that there being either causationary disease of the uterus, adhesions of the tubes, ovaries, or uterus, general subinvolution, and perhaps a pyramidal vagina, they could not cure. Hence the enormous number of kinds of pessaries; and where there is a multitude of remedies for one end, ineffectiveness is certain.

The charges to be brought against pessaries are, first, that they are ineffectual, because only the evolutionary symptomatic misplacement is treated, and the cause is not removed. In the virginal misplacement backwards the tubes are always to some extent affected, and are dragging the uterus backwards; and the uterus can very rarely be replaced and a pessary worn without much pain; the inflammation at the cervix is seen to be increased, and the tubes are additionally irritated by the pressure. Thus harm is done.

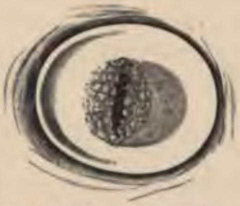
Virginal retroflexion from a fall, as from a horse, does not exist; but the symptoms of previously existing disease common in rough riding and athletic women, who by their formation as women are physically unfitted for such exercises, may thereby have been accentuated: attention is drawn to the part, an examination made, and retroversion or retroflexion found, but associated with its causes and evolutions. These organs were diseased long before. It is probable that a woman could be bumped down on her back, or ischial tubera, till her vertebral spines were broken, before so small and well-supported an organ as the healthy virginal uterus, tubes, or ovaries could be displaced—nor probably then. Therefore, to replace an inflamed uterus, and introduce a pessary under such assumption, ignoring the presence of coincident inflammatory disease, is injudicious, and will be found to be injurious.

In the virginal anteflexion of feeble development with a horizontal body, it is impossible to raise the latter permanently, because of the long and strong attachment of the cervix to the bladder intervening between the anterior vaginal roof and the body of the uterus, and the small opening remains as an accentuating cause.

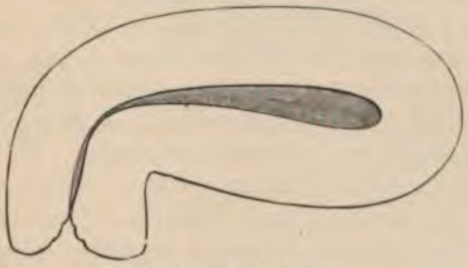
In the subinvoluted uterus, a pessary of very large size proportionate to the subinvoluted vagina is necessary, the injurious influence of which will presently be mentioned.

With adhesions of the uterus, tubes, or ovaries, the influence of a pessary for good must be ineffective, and in nearly all these conditions the body of the uterus will be found to have crept round and wedged itself between the pessary and the cervix, or the pessary has accommodated its upper end in the uterine angle, so that the body lies above or over it, and the angle of obstruction is accentuated. When a heavy, tightly retroflexed uterus resists many attempts by pessaries at maintenance of the normal position, and at length some form of cradle compels it, relief is not afforded; and subsequently, perhaps on abdominal section, adhesions of the appendages on one or both sides are found. After their removal the misplacement may not recur, but the pessaries increased the irritation, and were hopeless. It is quite rare that a pessary answers the purpose of maintaining a normal position, and, if it do, it does not cure the cause or the misplacement. How sad to submit a young woman to so disgusting a thing as a permanent pessary!

FIG. 111.



Prolapse in a woman of 76. Still has to wear a pessary. Old laceration of cervix with everted, hyperplastic, raw-beef granular lips. The anterior lip is partly covered with epithelium. The body is anteflexed. There is general atrophy, but the cervix and vagina are congested.



Section of the uterus.

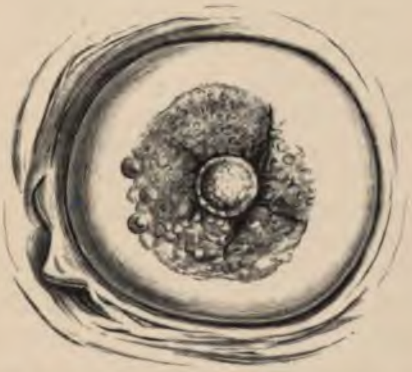
Again, when the tubes and ovaries have been evolutionarily affected, and are, as is usual, misplaced to some extent backwards, the upper part of the pessary presses on one or other or all of these, and resuscitates or increases the inflammatory action. In retroflexion or retroversion with tubes adherent posteriorly, the backward position of the uterus is essential for tubal drainage. Should a pessary succeed in forcing the uterus forwards, the tube is sharply angled at the utero-tubal junction, drainage is obstructed and evolutionary progress induced. This may go to the length of rapidly producing a tubal effusion into the peritoneum from tubal disease otherwise in abeyance, and in a few hours the temperature may rise to 105°, and death perhaps ensue. Of what service can such treatment be? But there was the evolutionary symptom of retroflexion, which was not thereby rectified, and the medical attendant was glad when she returned to her previous state; but she was worse for the treatment.

A pessary of the ovoid Hodge form, pressing high into Douglas' pouch, lifts the posterior lip of a lacerated cervix, and the anterior lip falls, the granular surfaces are separated and prevented from uniting, and irritation at the angle of laceration is produced. A Salt's circular watch-spring pessary, if it be small and lie horizontally, stretches the circuit of the vaginal roof; but if it be large and lie in the vaginal axis, it dilates the muscular fibres of the whole vagina, and similarly parts the surfaces and strains the angles of laceration; both forms thus tending to create eversion of the cervix and increased relaxation of a subinvoluted vagina. The cup-shaped upper limb of a Cutter's pessary presses on a granular os, and produces hyperplasia, and its lower stem farther dilates the subinvoluted or previously lacerated vaginal opening by pressing back the perinæum, and in reclining positions effects the admission of atmospheric pressure. In subinvolution the vaginal muscles are apt to be in a state of paralysis, and the desire should be to restore their action as far as possible, so as to make a natural floor and support for the uterus and intestines. But a pessary continues their overstretched state, and to be effective it must be very large, so that after a time all hope of their contraction is passed, and a pessary can never be discontinued. It is common to remove pessaries of enormous size—indeed, as large as the circumference of a child's head. It is antagonistic to involution and contraction, which are essential for cure. How can a pessary from below resist the downward pressure of stays and skirts from above?

In the subinvolutionary states of the vagina with perinæal laceration and a heavy tightly retroflexed uterus recurring after removal of the appendages, it may be that nothing but removal of the uterus cures, though other modes can be tried; but pessaries accentuate the evil.

When a pessary is effective it is apt to be so large as to produce a pressure which results in destruction of tissue, so that it is not very rare to have to remove one which has made its way in part through the vaginal membrane, which may have grown over it, forming a retaining band; or one which has perforated the bladder, or rectum, creating an extensive vesico-vaginal, or recto-vaginal fistula. It frequently produces minor

FIG. 112.



Laceration of the cervix with eversion, granulation, areolar hyperplasia and tight retroflexion of subinvoluted uterus. A Napier's pessary has been worn, and the pea-like prominence fitted into the drain-opening of the pessary.

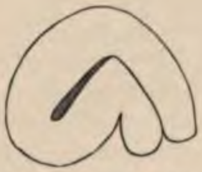


Diagram of tightly retroflexed subinvoluted uterus.

ulcerations of the vagina, which may subsequently threaten or induce cancer. It habitually creates some vaginitis. Also it is almost always septic from accumulation of dead uterine and vaginal epithelial cells, which the patient can rarely remove; for, should she take out the pessary, the retroflexion recurs, and she cannot herself replace the uterus. She is not always able to visit her physician once a month for this purpose, and should she do so, the pessary is septic in the meantime. The long-worn pessary itself decays and collects putrefying matter in its interior, which is irritating to the uterus and vagina. Its presence is opposed to marital union, which is a most serious drawback, striking at the root of the institution of marriage, and especially of monogamy.

Intra-uterine stems fill the cervical canal, and, becoming blocked with mucus, obstruct the corporeal flow, and in expanding stems the extremities of the wings press upon and irritate the endometrium, and rest against the openings of the tubes, tending to close them.

What condition, then, is left for the satisfactory and effective use of the pessary, when the final result of the case is taken into consideration? A few cases of parous normal os with retroflexion or prolapse from subinvolution of the endometrium and broad ligaments, and moderately lacerated perinæum in women who refused, or were unable, to have the proper treatment for subinvolution, or repair of the supports adopted, and whom it may injure, never cures, but occasionally relieves.

Thus, to summarise, it is asserted that pessaries are habitually ineffective to relieve, and never cure a displacement; that they are frequently injurious, if not dangerous; that they are customarily loaded with septic matter, and destroy marital union. To introduce a pessary is to have given up hope of cure, and to expect only a possibility of relief by their use to the end of life; and there is no doubt in my mind that the injuries done are out of all proportion to the advantage occasionally gained. With advancing knowledge pessaries, like bleeding, will cease to be.

No doubt there are certain cases of women too old for operation whom it is necessary to support by some mechanical means, as a Salt's circular watch-spring, a Greenhalgh's rubber modification of Hodge's or Napier's pessary; but these women should have been cured when they were younger, and the late use of pessaries gives a very poor relief, and frequently leads to evolutionary disease, even late in life.

After parturition a tight binder is particularly injurious, almost compelling retroflexion.

Treatment.—The reduction of abdominal pressure is essential. This includes removal of constriction by the stays, so that the intestines may not be pressed downwards on to the body of the uterus. To this end the form of a woman in her clothes should be the same as when out of them, and her size in her clothes proportionate to their increased dimensions, so that room exists for free respiration, as well as for the food taken at meals. This is particularly necessary in those who take vigorous exercise, as in lawn tennis, &c., and is most important in virginal conditions, when, from the strength of the resistance of the abdominal muscles, whatever pressure is produced must act downwards through the pelvis, and therefore depress the uterus. The stays should meet without leverage for their locking, and better by loops of tape or buttons than by steel busks, and after this fastening the laces at the back should not be tightened. Similarly, and of much importance in those who have borne children, is the prevention of pressure by the weight of clothes, which, bearing on the flabby and frequently fat abdominal walls, depress the intestines on to the uterus. To this end the skirts and petticoats should be carried from the shoulders. This may be effected by the use of braces or suspenders such as men wear, to the ends of which are attached large hooks, the corresponding eyes being sewn on the skirts. The same end may be better gained by wearing a jacket made of duck or drill, or other stout material, with hooks and eyes similarly attached; or the clothes may be worn as continuations or combinations. A well-fitting abdominal belt, firm over the symphisis pubis and loose at the upper edge, will support lax or fat abdominal walls, or better, a combination of stays and abdominal belt. A well-fitting belt instead of a binder after labour is indicated.

Posterior displacements may be divided into—

A. The reducible, which may be defined as being capable of replacement by the finger or sound, and of retaining the normal position on removal of the sound when lying on the side.

B. The non-reducible, which are those which do not replace at all, or on the withdrawal of the sound revert to the backward position.

Of the A class, the reducible, there are two divisions :—

(*a*) The virginal, in which the tubes and ovaries are heavy, and displaced posteriorly, dragging the congested fundus backwards, and in which evolved disease has not yet resulted in peritonitis and adhesions : the production of drainage by dilatation and curetting, and the removal, by resection, of granular and hypertrophic tissues, cervical and corporeal, relieve the heavy tubes and frequently lighten them sufficiently to enable them to rise and regain their former tone and position without irritation. Very few of these cases but are injured by a pessary, because of its constant pressure on the irritable tubes and ovaries. Marriage and pregnancy will now complete the cure of many of these cases. It is true that in strong sexual instinct without marriage the condition which pregnancy would have cured may persist ; but this is the fault of our social state, and not within the control of the physician, as is not the lunacy that may result.

When the causes are cured, the persistence of the misplacement, which rarely extends to flexion with obstruction of the canal, is usually unimportant ; but the evolutionary tubal disease may continue, and may require further treatment ; but it is quite marvellous how this usually yields to the removal of cervical irritation and corporeal tension.

Occasionally it is useful to endeavour to remove the drag and pressure of the uterus on the irritable tubes and ovaries by applying a small pad of glycerine cotton against the os, and supporting it by little rolls of wadding or by a cotton plug. This, however, never cures the retroflexion, and probably acts by draining and lessening the weight of the uterus, and allowing the tubes to regain power and position, in proportion to the relief of the cause of their disease.

(*b*) The second division of the reducible posterior downward displacements is the class of cases of subinvolution of the uterus without adhesions, in which its supports, lengthened in pregnancy and stretched or torn in labour, have by deficiency of involution not yet regained their normal tone. Thus the broad ligaments remain long, the vagina is lax, and the vulval opening is unduly large by laceration of the transverse fibres of the pubo-coccygeus muscle, or of the perinæum, with lateral retraction of the superficial perinæal muscles. In the great majority the uterus will have become retroverted or retroflexed; and the treatment by removal of pressure and weight on the abdomen, and drainage, curetting, and healing of lacerations produces such a narrowing of the vaginal roof, and raising and lightening of the uterus, that many regain their normal position without further assistance, or such misplacement as persists is no inconvenience. Or the uterus may be somewhat supported and drained by a small glycerine cotton pad, or by columning with small rolls of wadding to the extent only of creating no vaginal expansion, and a strongly tonic and involuting treatment of the general system adopted to induce Nature to regain her normal power.

A vaginal suppository of from two to five grains of quinine introduced at bedtime two or three times a week, to the extent of not producing mucous irritation, also tends to invigorate the muscular and connective tissue structures, and provoke local muscular contraction.

Cohabitation, in order to maintain marital happiness and meet the sexual instinct of husband and wife in monogamy, but not pregnancy, that the strength of the wife may have time for restoration, is now indicated.

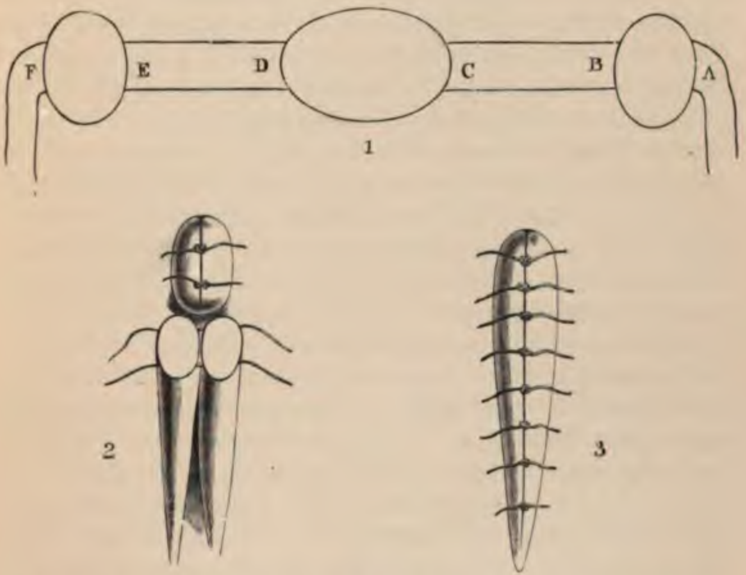
In a more advanced stage there is descent of the uterus, and its assumption of an axis of the pelvis lower than the normal, with progressive retroversion or heavy retroflexion, or prolapse of the uterus, which is consequent on laceration of the perinæum, generally associated with a lacerated cervix, and coincident subinvolution with excessive laxity of the ligaments, and such persistent dilatation of the vagina, with perhaps prolapse of its walls, vesicocele and rectocele, that it is pyramidal, and the uterine supports are deficient. Then vaginal pessaries cannot be retained, nor will a pessary held up by external rubber bands effect more than a temporary support at best; for, assuming that replacement could effect a cure, which it cannot, and that after replacement the normal position is maintained by such a pessary, on its removal, as at night, the retroflexion recurs, the patient herself cannot replace the uterus, and the pessary is then ineffective and injurious. In these cases the needful procedures are the repairing of the uterus and perinæum by dilatation, curetting, and Emmet's, or a modification of his operation of trachelorrhaphy, anterior and occasionally posterior colporrhaphy, and Lawson Tait's or Emmet's perinæorrhaphy, which create such a support as raises the uterus, and probably maintains the normal position. Subsequently no pessary can be applied, for it would dilate the now contracted parts. Increase of the woman's weight is of very great importance.

But if the results be not so perfect as this, the inflammatory weight is so reduced and the support so much increased that the moderate displacement usually gives no, or but slight, inconvenience, unless the tubes and ovaries be seriously affected or compressed; and thus in exceptional cases Alexander's operation of shortening the round ligaments is of service, but there must be no peritonitic adhesions; and even after it, it is not rare to find that the neuralgias continue—as indeed they may after removal of the appendages and the assumption of the normal uterine position. In these cases the improved nutrition of the nerve centres, which long malaise and pain have wasted, by Weir Mitchell's treatment of massage and feeding, is specially indicated, and is most effective.

Emmet's operation of anterior colporrhaphy, which may be similarly adapted to the posterior vaginal wall, is thus performed.

Endometritis and laceration of the cervix have previously been cured. The patient having been prepared, and the vagina cleansed with a perchloride of mercury solution of 1 in 2,000, is placed in Sims' position, and Sims' speculum introduced. The retroflexed uterus is replaced with the sound. Very high in the vaginal roof, just in front of the cervix, a hook catches the vaginal membrane, and with angled scissors a piece of vaginal membrane of a transverse elliptical form is removed (C D). A hook now catches a part at the left side, which with hooks is readily found to meet C D, generally just anterior to the lateral median line, and a piece (A B) is removed of the size of half of C D, and similarly on the right (E F). A curved needle now enters the edge A of the last vivified part and emerges at B, re-enters at C and emerges at D, re-enters at E and is brought out at F, and similarly others below. The sutures are tightened, when the right and left raw surfaces lie over the central one, and the vaginal roof is reduced in its circuit by nearly half, with the effect of crowding back the cervix uteri. Two folds are thus formed, and along the upper edge of each a section is again made and sutures introduced, and thus down to the level of the upper border of the urethra, or lower anterior vagina. The circumference of the upper two-thirds of the vagina is thus reduced by nearly half. Perinæorrhaphy is also desirable, and can be performed at once, if the vaginal sutures be of soft gut and aseptic, when their removal is unnecessary.

FIG. 113.



Emmet's operation of colporrhaphy, showing (1) the sites first pared, and the sutures introduced; (2) the first sutures tied, the second paring, and the sutures introduced; (3) after completion of the operation.

B. The non-reducible retroflexions of the uterus, virginal or parous, are those in which the body of the uterus is held back in the cavity of the pelvis by organised fibrinous adhesions, attaching the uterus to the anterior rectal wall, or by one or both tubes or ovaries adherent latero-posteriorly or posteriorly. Between these two states a practical distinction is to be drawn. In the former case it may be that organised fibrinous adhesions occupy Douglas' pouch, and the uterine fundus and anterior wall of the rectum are densely, closely, and permanently united, which, however, is exceptional, and is seldom found on abdominal section. The causes and the congested state of the tubes or ovaries may be relieved by dilatation, curetting, and healing of granulations, and fine fibrinous bands stretched, or it may be separated, by careful columning, so that the uterus may, in part at least, rise towards its normal situation, particularly by subsequent progressive pregnancy. Such cases are frequently found in the originally virginal causations; and even in those in which it appears certain that extensive disease has disorganised the appendages, it is frequently most surprising how great benefit is gradually experienced, and how comparatively rare it is to have to adopt an operation for their removal.

In such cases as these, after removal of the conditions which caused the peritonitis, and resulted in the exudation and organisation of the cohesive fibrin as hereinbefore described, the gradual raising of the uterus and stretching of the adhesions is indicated. For this purpose, so far as vaginal means go, no coarse instrument as a pessary can be used without injury. Even when the uterus can be replaced with a sound, and a high, much-bent glycerine pad—Greenhalgh's, or other similar pessary—would seem to form a crescentic back to the uterus, it will be found that the retracting power has drawn the fundus round laterally, till it has become wedged tighter than before into the posterior position, the pessary being in the angle of flexion, posterior to the retroflexed or displaced fundus of the uterus. In less favourable cases the irritation of the pessary may induce peritonitis, the temperature rise, and even death ensue, probably from the pressure of continuous forcible replacement on vascular irritable adhesions; or, more frequently, from the pessary having induced the passage of fluids from the tubes into the peritoneal cavity, or the rupture of ovarian cysts with irritating contents. Similarly, no pulling-up operation by shortening the round ligaments is possible, for such drag must be sudden, and on tender adhesions or congested appendages, and inflammatory results ensue. Yet, by means of a persistent drain by glycerine cotton pads, or small cylinders of wadding suitably placed, the congestion may be reduced, and distensible bands stretched and deprived of their retracting power; it is a gradual action, logical, safe, and effective, if the conditions be capable of reacting to such influences. I have many times seen such cases relieved by the above-mentioned measures to such an extent that, though the position was perhaps not normal, pregnancy effected the remaining cure, and terminated normally with regard to the immediate and subsequent conditions; and in all states of virginal inflammatory disease, in which the above described treatment has produced a normal canal, and uterine misplacement has been reasonably rectified, which are the usual results, marriage with its expectation of pregnancy, though this is occasionally extra-uterine, is most desirable. But posterior bands of adherent fibrin, from which œdematous congestion has been drained by the glycerine pads and previous treatment, or curly adherent tubes, or misplaced adherent ovaries, may maintain the retraction of the uterus in its position of retroflexion. Many of such patients are, however, quite comfortable, gain flesh, and do well. Nothing further could be done for them, unless these appendages were removed, which may be quite unnecessary; although a few exceptions, chiefly from direct pressure of the retroflexed uterus on the adherent ovaries, or septic progressive disease, may subsequently require this more serious treatment.

The treatment of retroflexion in the condition of pregnancy depends on whether or not there be adhesions; but if there be, pregnancy is exceptional, for disease of the tubes was the probable cause of the peritonitis producing the exudation of fibrin, and they are therefore usually bound down; one may, however, be free, or the adhesions may be slight, or a fimbria may be adherent to a rupturing follicle, and the ovum enter the tube, the stenosis of the uterine end being perhaps temporarily relaxed.

When the uterus is free, retroflexed and pregnant, the woman may be placed in Sims' position, and the depressed fundus or posterior wall gently raised by one or two fingers, which depresses the cervix. This movement is repeated, and the body may gradually or suddenly assume the normal position. Should this not occur, the woman may be placed in the knee-elbow position, in which the influence of gravity is placed in more favourable circumstances; and in one or other of these positions there should be no difficulty in replacement; but if there be, the pressure may be applied through the rectum. The replaced uterus may be retained in the normal position by a neatly fitting Greenhalgh's pessary moderately bent to act as an arm-chair to the uterus by slightly raising Douglas' pouch and thus placing it in the axis of the brim; and the pessary may be worn till about the third month of pregnancy, when the uterus has risen out of the pelvis and cannot revert to its faulty position. The application of a pessary is not, however, of great importance; for if the uterus have arrived at any size, and the flexion be affecting the woman, it is large enough to commence to rise out of the pelvis; and the reposition is sufficient to enable it to develop upwards in the axis of the brim.

If a pessary be not introduced, the uterus may fall back again and have to be replaced once a week for two or three consecutive weeks, until it retains the normal position; this removes the danger of recurring retroflexion pressing on the pessary, and probably irritating the angle of flexion till re-arranged. All abdominal pressure must be removed, and no weights lifted till the uterus has risen out of the pelvis.

When from the advanced period of the gestation with inattention of the woman to take advice, the body presents downwards and backwards, and the os is quite high in the pelvic cavity pointing upwards and forwards, if all justifiable means without force for replacement have been used unsuccessfully, and it be evident that the fundus cannot be raised, but must grow downwards, it is better, after consultation, to produce separation of the ovum by the sound, and let abortion proceed in an easier manner than if the uterus were allowed to increase still more, so as to fill the pelvis. The farther treatment in case of failure of complete abortion is, as in other cases, by dilatation and removal with ovum forceps, which is rendered easy by the reduction in size of the uterus by escape of the liquor amnii.

When the uterus is slightly adherent through a tube and moderately retroverted, it is probable that the slow progress of development of pregnancy will stretch the adhesions, and that the anterior wall will grow and bulge forwards, so that gradually the uterus rises normally into the abdomen. It is not wise to interfere in the process, for this might involve sudden separation of adhesions, which are apt to be composed of a number of slight highly vascular threads; when some peritoneal hæmorrhage and peritonitis would ensue, and probably abortion.

If the adhesions be of a dense character, the uterus cannot rise; and in the contention between the internal development of the ovum with enlargement of the uterus, and the restraint of the adhesions, such irritation is produced as results in abortion. This may be treated at first tentatively; and, should the ovum not be expelled, or a portion be retained, the canal must be dilated, the retained portion removed by the ovum forceps, and the cavity syringed out with the perchloride solution. Future pregnancy is to be avoided.

LATEROVERSION AND LATEROFLEXION.

Prophylaxis.—Prevention of the adherent states, which occur, as in other similar adhesions, by tubal affection, effusion, and peritonitic exudation, can only be effected by removal of the causes; which is by the cure of the original endometritis, effective drainage, the healing of granular surfaces, and the production of a healthy and normal opening; always assisted by absence of abdominal pressure.

In the parous state without adhesion, the prophylaxis is that of subinvolution.

In the operative causes, prevention is as against septic infection, and effusion from the tubes into the peritoneum.

The lateral position of the uterus is due either to such a flabbiness of structure or support as permits the body to fall over to one or other side according to the influence of gravity, which from the point of view of position is immaterial; to the pressure of a lateral tumour pushing the uterus over to the opposite side, when the tumour is the important condition; or to a previous affection of the tube having produced fimbrial effusion and exudation of fibrin, contraction has ensued, and the body is drawn over to that side and is there adherent; which is irremediable except by abdominal section on symptoms of sufficient severity presenting themselves.

It is thus in no condititon advantageous, nor in the two latter causes justifiable or devoid of danger, to use a pessary. The causes, if continuing and irritating, may be treated by curetting and paring. Beyond this the consideration is as to the degree of affection of the tube with reference to pain and ill-health of the woman.

THE TREATMENT OF DISEASES OF THE FALLOPIAN TUBES.

Dilatation and distension of the tubes in atresia is discussed under that title.

Theory of Treatment.—While the closure of the fimbrial end by peritonitic adhesions is frequently complete, that of the uterine end is rarely so. There is commonly a stenosis and obstruction to escape by the inflammatory thickening of the mucous membrane of the proximal part of the tube; but this is constantly subjected to the pressure of secretions attempting to escape through the uterus. Absolute closure by contraction and union of the adjacent faces of the tube may no doubt occur, but very seldom. This is shown to be the case by the frequent escape through the uterus of tubal collections, and also after years of tubal disease by gradual partial recovery, perhaps resulting in tubal fœtation; so that the walls of the uterine end can never have been absolutely adherent, however much constricted and the canal compressed.

In itself inflammation of the comparatively insensitive tube is not serious, for a mucous congestion or inflammation can subside and the tube be pervious; but its evolutionary effects through stenosis of the minute uterine end, of which peritonitis is generally the most severe, are of intense importance, at once and for ever destroying the functional utility of the appendages of that side, for the line of communication between the ovary and uterus is closed, and the commencement of farther pathological changes is made. The object of treatment, therefore, is to facilitate relaxation of and drainage through the uterine end of the tube, and avoid such action as may tend to promote passage of fluid through the fimbriæ, or otherwise induce peritonitis.

Prophylaxis.—The prevention is by the cure of the possible causation of tubal disease, and the avoidance of doing such things as are likely or liable to inflame the tubes; or, when they are somewhat affected, of accentuating or resuscitating the disease, whereby distal effusion, peritonitis, and distal adhesion and closure may ensue.

It is of the first importance to prevent the admission of gonorrhœal infection into the cervix; for, should it enter, the tubes will certainly be quickly affected.

In endometritis, acute or chronic, no treatment may be adopted which can increase obstruction about the cervix, whereby tubal drainage is the more impeded and the mucous membrane inflamed and thickened. Especially does this apply to the use of caustics within the body of the uterus in any condition in which the cervical canal does not so gape as to permit considerable thickening of its walls, whether at the inner or outer os, or at the perhaps constricted level of a hyperplastic laceration, in consequence of the caustic irritation, whereby temporary closure may effect tubal irritation and perhaps effusion, which may also occur from the local irritation at the uterine mouth of the tube.

Similar injury may be produced by the introduction of intrauterine stems, and tents which readily also become septic; or by the introduction of septic material in any manner, which first attacks the endometrium and then passes on to the tubes. The coarse use of the sound, particularly when not clean, may accentuate the diseases present.

More directly, lotions injected into the cavity of the uterus without a return canula, and even with it, if its eye press against the wall of the uterus or be obstructed, may thus enter the tube.

In performing resection or trachelorrhaphy the opening must not be closed by sutures placed too closely together, particularly towards the centre; nor subsequently must the lips be allowed to cohere. In atresia from whatever cause, Sims' position inducing ballooning of the vagina, or other form of pressure, is dangerous, as promoting passage of uterine fluids into the tubes, or of tubal fluid through the fimbriæ.

A pessary over which the retroflexed uterus falls accentuates the uterine angle of flexion, and thus obstructs drainage; and, should it succeed in maintaining the anteverted position of a previously posterior uterus when the tubes are adherent posteriorly, an acute angle of flexion is produced at the utero-tubal junction; the retroverted position of the uterus suited the adherent condition of the tubes and facilitated drainage.

For similar reasons a pessary must not press on a posteriorly adherent tube, and forcible separation of tubal adhesions which are not seen may open up the fimbriæ and allow the tubal contents to escape into the peritoneum.

Should the tubal tumour gradually increase and become of considerable size, there is a strong mental suggestion that if a trochar were introduced, the sac punctured, and the fluid drawn off, relief or cure would be afforded; and this is certainly true in some cases. It has, however, to be remembered that the trochar may pass through the expanded cellular tissue of the broad ligament. On its withdrawal some of the fluid will probably follow it and may contaminate the tissue, when progressive inflammation may follow; and if the fluid be pus, the expectation is that the tube will refill from the continuance of the cause which originally induced it. If the trochar do not pass through the broad ligament, it pierces two layers of the peritoneum, and the final discharge may ooze through into the peritoneal cavity, and induce a greater or less peritonitis according to the degree of acerbity and quantity of the effused fluid; or it may wound the uterine artery, many of the branches of which may be felt pulsating, and forming a close network on the inferior surface of the enlarged tube. In either case, under the most favourable circumstances, adhesion and contraction ensue; and if in the milder condition of affection of only one tube subsequent pregnancy occur, the expectation is that the uterus will not be able to rise in the pelvis, and that abortion will occur; and there is also the probability that the tube will refill.

But in many such conditions, and certainly when the cause is gonorrhœal, both tubes are affected, and aspiration or puncture of one tube only must be inefficient, and it is almost certain that the pus will re-form. In past times I have treated cases in this manner, but the operation was critical, and sometimes severe. The patients, after a period of great danger, recovered, and have remained in excellent health. However, with our present experience of the multiple conditions in which it is found on abdominal section that such treatment would have been hopeless, it is unwise to operate in the dark in such diseases.

Many cases with a sensation of considerable puffing and thickening of the tubes are non-adherent, and on removal of the cause quite recover their normal powers; even in gonorrhœal causations pregnancy is, after an interval of years, not infrequent, though it may be extra-uterine.

How many women one sees whose tubes have been affected! They were in bed for a week or two with 'inflammation of the bowels,' and recovered; a trochar was not used for them, and they made a recovery very certainly as good as if it had been, and often better than those in whom this treatment was, adopted. But patience, a close appreciation of progress, and readiness to meet emergencies are essential.

From the above considerations it will be seen how important it is not to introduce a trochar into a tube which, under reposeful treatment and the removal of the original cause of disease, may perfectly recover and be normal; for the blood or fibrin exuded will certainly bind it down and render the woman sterile, certainly on that side.

The prophylaxis of the obstruction of the tubes by tumours is only to be met by the early treatment of the tumours themselves.

Treatment.—The treatment is of the primarily acute, or of a chronic stage, it may be with exacerbations.

In the primarily acute stage with a raised temperature there is an inflammation of the mucous membrane of the tube from catarrhal, septic, or gonorrhœal causation, which temporarily obstructs the bristle-sized canal towards the uterus, so that the secretions tend to accumulate in the body of the tube external to this stenosis. In the individual case will the uterine end relax and permit discharge before effusion through the fimbriæ occurs, effecting peritonitis, exudation of fibrin, and closure? or, in case of a virulent septic causation of the tubal inflammation, a virulent peritonitis? Every endeavour is to be made to assist relaxation of the proximal extremity. Thus rest in bed is necessary, and is indicated by the temperature; hot moist applications, whether flannels wrung out of boiling water or sloppy poultices, are to be applied over the abdomen; and a comfortably warm solution of perchloride of mercury, 1 in 2,000, or, if necessary, subsequently weaker, may be injected into the vagina three or four times a day; the bowels are to be well relieved daily, if necessary, by the use of saline purgatives, assisted by careful rectal injections; and in a catarrhal causation, seven grains of potassium bromide with three or four minims of liquor opii sedativus tend to relieve muscular spasm of the tube. But if the cause be septic or gonorrhœal, five grains of quinine, generally in pill form as made by McKessan and Robbins, two or three times a day, or twenty grains at about 4 P.M., seem to counteract the septic action and reduce the temperature more effectively. The diet is farinaceous with milk and broth. Should the uterine extremity not yield, effusion at the distal end presently occurs, inducing a local peritonitis, which probably results in the adhesion or congestive hyperplasia and closure of the fimbriæ. But, on the fimbriæ becoming firmly closed, the secretion accumulates in the body of the tube, and probably presently makes its way in the direction of least resistance through the uterine end, and thus drains. During this period the same treatment may be continued until the condition has settled down into a quiescent state; and this is usual.

In case of a gonorrhœal or septic causation, the peritonitis on effusion is of so virulent a kind as to require early abdominal section, removal of the tube or tubes, and washing out of the peritoneum.

In the chronic state in which the tubes are felt to be somewhat thickened and latero-posterior, and the cause is endometritis from virginal granular and everted, or parous lacerated and everted granular cervix, these are to be cured by dilatation, curetting, resection or trachelorrhaphy, and suturing without pulling down of the uterus, with antiseptic precautions and subsequent injections, when many are quite cured and pregnancy may ensue; or by this treatment the evolutionary progress is stayed, for, in future, drainage of the uterus is normal, and the irritation of the cause has been removed.

Even when acute exacerbations of temporary tubo-uterine closure with perhaps purulent collection in the tube occur, the drainage may finally become normal and the tube completely heal, so that the woman becomes quite healthy, though the tube is certainly closed at the fimbriæ and perhaps adherent.

If, on the other hand, such drainage do not occur, pus collects in the tubes, and the condition is that of continuous pyogenic fever; nothing remains but to remove the tubes by abdominal section, unless in an occasional rare exception when the suppurating tube is adherent in Douglas' pouch, and can be readily opened and drained through the vagina. But there is no certainty that the other tube, which cannot be reached in this manner, is not similarly affected.

Finally, in those conditions which, by reason of the acute inflammatory stage reached in the evolution of the disease, threaten shortly to destroy life; or in which there is a chronic inflammatory state with varying temperatures, generally indicating persistent tubal formation of pus with irregular or without discharge into the uterus; or in which there is constant pain from the drag on peritonitic adhesions of the ovary; or from the tension of ovarian cysts, where peritonitic fibrin has so coated the ovaries as to prevent the rupture of the ripe Graafian follicles; or from such adhesions of the distal extremities of the tubes as prevent sufficient expansion of the bladder: in all these states the capacity of propagation is permanently destroyed, and the woman is a constant or frequent invalid, incapable of performing her marital and domestic duties. In these cases, which have been either so virulent in their causation and evolution, and which are frequently gonorrhœal, or have by neglect been allowed to reach such a strait, our only resource is the removal of the appendages. Thereby no injury is done to the sexuality of the woman, for she was incapable of performing the functions of propagation, and usually of married life, by the presence of her diseased state; but general health may be restored to her, and, except for her incapacity of bearing children, she again becomes a wife. The condition is incapable of relief, but it can be removed.

THE TREATMENT OF EXTRA-UTERINE FŒTATION.

Theory of Treatment.—Extra-uterine fœtation presents various conditions. First, as to the tubal variety. Taking the easiest condition, assuming that a married non-parous woman has had a virginal granular os with evolutionary endometritis and inflamed tubes, which, however, have not induced fimbrial effusion, peritonitis, and adhesion; that the os and endometritis have been cured by treatment, and the tubes have been relieved, but their mucous membrane still remains puffy, the spermatozoa may travel through them and impregnate the ovum, which by the increased vascularity induced by the impregnation may not be able to effect a passage through the tube, and thus be retained therein. The woman's catamenial interval is exceeded, and there are the usual early symptoms of pregnancy; but the uterus is not proportionately enlarged, and the tumour of the tube is felt to occupy a latero-posterior position. In another week these conditions are accentuated, and tubal fœtation is apparent. What shall be done? If it be left, in all probability rupture will ensue, and she may rapidly die of hæmorrhage; if she do not die, blood will be effused in considerable quantity into the peritoneum, and the ovum will probably necrose, infect the effused blood, and septic symptoms ensue. Certainly, even in case of encapsulation and under the most favourable circumstances, the progress will be exceedingly slow, and the woman an invalid for years. Permanent, extensive, uncertainly attached peritonitic adhesions will have occurred with a nucleus of a dead ovum and tube, of which the future progress cannot be foretold.

Prophylaxis.—It is evident that these dangers ought to be avoided. Three modes offer, of which the first is to cause the death of the ovum by puncture, with the hope of its atrophy; the second is the electric current, without puncture; and the third, the removal of the tumour by abdominal section.

1. The first mode, to cause the death of the ovum by puncture, may be effected by anything that perforates the amnion, and effects the escape of the liquor amnii. Thus the introduction of a needle, electric or otherwise, or a fine trochar, with or without injection of a drug, as of morphia, is likely to cause such an opening so that this fluid escapes; and this it does, either into the peritoneum or the broad ligament. In itself this would appear to be a simple and hopeful procedure. But the adjacent structures are intensely vascular, and, even though the fine trochar may accurately pierce the amnion, and at first draw off only the clear fluid, presently blood may flow continuously; and the position is the alternative between leaving the canula *in situ* for the flowing blood to escape through it, or to remove it, and allow the hæmorrhage to continue, or, should it cease, to coagulate as a long clot in the line of the introduction of the trochar.

The vitality of the ovum having been thus destroyed, the life of this escaping clot is also affected, and necrosing bodies are thus determined both adjacent to and in the cavity of the peritoneum, or in the broad ligament. Peritonitis or cellulitis presently ensues, the temperature steadily rises, and early abdominal section has to be performed; but perhaps too late to save the woman, in the event of septic infection of the connective tissue.

If the puncture be made in any other manner—as with the injection of morphia—the same results are likely to ensue; but if a needle, and not a canula, be introduced, the liquor amnii also probably escapes—generally into the peritoneum—and is, perhaps, readily absorbed; but the necrosis of the ovum is a serious complication, generally leading to the need of complete removal. And similarly with the electric needle, of which the electric action cannot coagulate the fibrin so rapidly and solidly as to prevent the liquor amnii and blood escaping, with the before-mentioned results. Nor can its introduction be so perfectly conducted that it is certain that it does not pass through a vascular structure. Thus puncture carries with it grave dangers, which are better avoided.

2. The application of the electric current is made 'when there is no probability of rupture,' and the case is thus open to the criticism of uncertain diagnosis. The doubt also occurs as to whether, when one pole is (as is advised) applied in the vagina near the enlarged fœtation and the other on the abdomen, the electric current can exercise an influence which traverses the various layers of intervening tissue, and produce the death of the ovum without affecting the vitality of all other intermediate structures. They are all dependent on the maternal circulation, and it would seem that they should be equally affected. Though it certainly occasionally happens, it is rare to have the opportunity of diagnosing an unruptured ectopic gestation; and, personally, I should seriously hesitate to await rupture while using this treatment. Such ova may die at various times, and from various causes inherent in their own condition; but doubtfully from electricity thus applied.

3. *Treatment.*—In these days of abdominal experience, the safest mode is the third—to open the abdomen and remove the unattached and unruptured tube, whether the consideration be of freedom from imminent danger, or from future malaise.

When, however, rupture of a tubal pregnancy has taken place, the woman instantly suffers from shock from hæmorrhage, and the passage into the peritoneum of a foreign body: absolute rest is essential, and the restoration of warmth by hot bottles, and so much stimulant as the faintness demands. The question then arises as to whether it is safe to temporise, or better to operate at once. In case of evidence of continuance of hæmorrhage, abdominal section is at once to be performed; but in case of good reaction it is well to wait till the patient has recovered some strength, when removal is to be effected. It is wonderful to how great an extent necrosis of the ovum, and septic infection, with great fœtor of the effused blood, may be present with only slight symptoms of low peritonitis; but the conditions are present, and it is well to operate before this stage is reached, whereby the final adhesions in the healing will be greatly reduced, and there is less future risk of contraction of intestine.

Should the fœtation be interstitial in the wall of the uterus and tube, the body of the uterus may have to be removed by Porro's method, which may be rendered more easy by the fact that this form may not rupture till a much later date than is common in tubal gestation, and the tumour is thus large, and may come well outside the abdominal wall. In such a condition at from three to four months it is not desirable to await rupture.

In abdominal fœtation, or the varieties in which the ovum and placenta are mainly attached to the peritoneum, the time of operation to be selected is when the tumour presents so well against the abdominal wall, that it can without tension be stitched to the sides of the incision for subsequent escape of the placenta. There is no advantage in awaiting the full term of the child, for whether or no it might live, the life of the mother is of the first consideration, and the longer the tumour remains the greater the risk of rupture, and the larger it grows the greater the intestinal adhesion and future contraction. The abdomen is opened, flat sponges are packed around the sac, which is opened so that the liquor amnii does not pass into the cavity, the child is removed, the cord tied, sutures connecting the sac with the abdominal edges are introduced, the sponges removed, the sutures twisted, the cavity of the sac moderately packed with iodoform gauze, and the cord hangs through the opening. The placenta separates in due course and is thus removed, and the sac gradually contracts. The same treatment applies to cases seen at later dates of pregnancy.

THE TREATMENT OF ATRESIA.

Prophylaxis.—As it is impossible to know to what extent the catamenial secretion has accumulated in the tubes, and how imminent effusion from the fimbriæ into the peritoneum may be, no pressure, abdominal or vaginal, is permissible. Sims' position, whereby the uterine weight is thrown towards the tubes, is unjustifiable. Similarly, intra-uterine injections, however delicately given, might pass through the tubes and effuse into the peritoneum, and are unnecessary.

In parturition the head is not to be permitted to press for an undue time on the cervix under clonic uterine contraction.

In view of the frequent progressive contractile cicatrisation after the application of caustics or the actual cautery to the cervix, these are to be avoided as liable to be imminently dangerous in their action, rarely advantageous in their effect, apt to be permanently injurious, and unnecessary.

In plastic operation about the cervix, a suitable form is to be adopted, the median sutures are not to be closely approximated, and subsequently the canal is to be maintained patent.

In amenorrhœa, with suggestive symptoms of atresia, an early examination without injury to the hymen is to be made.

Treatment.—When the closure is of the nymphæ, with the patient on her side, separation with a probe is usually easily effected. If of the hymen, it is sufficient to make a nick in it with scissors and to dilate with the fingers. The collected fluid is forced out by internal pressure, and after the superabundance has thus escaped an iodoform pad receives the subsequent continuous flow. The uterus and the tubes, if dilated, gradually collapse by contraction of their muscular fibres, and regain the normal calibre. The external parts are maintained aseptic.

If the vagina be atresic, the patient is placed on the back, in the lithotomy position, with the thighs only moderately drawn up and everted. If the lower sulcus be very firm, a small incision is made in it with scissors; but usually the finger readily separates the adjacent surfaces, especially if they be of cohering mucous membrane. Keeping well in the imaginary line of a normal vagina to the os uteri, midway between the urethra and the rectum, the intervening structure, whether mucous membrane or connective tissue, is parted; in the latter case an occasional dense fibre being carefully nicked with the scissors. Thus the os uteri is reached.

The os being now exposed, or it may be that the vagina was normal and the uterus only have been congenitally or cicatricially closed, a dimple or prominence or sensation of difference at the site where the opening should be is felt by the finger; a Sims' speculum is introduced with the patient as before, or lying on the side with an inclination towards the back; a straight vesico-vaginal knife is introduced transversely at the spot indicated, and the collected secretion escapes. It is not desirable to make the incision large, for gradual uterine contraction is desired, not collapsed, lax, flabby, overdilated, wrinkled walls inviting septicæmia. The vagina may be syringed night and morning with a 1 in 2,000 solution of perchloride of mercury, and later with boric acid. An iodoform pad, or pulled tenax, is placed over the vaginal outlet, and changed as may be necessary.

Quinine, to promote contraction of the uterus, is indicated in doses of five grains three times a day, best taken as coated pills, or less if the patient be sensitive to the medicine; and if the temperature rise, the cavity of the uterus may be very gently syringed out with a return canula with the solution of perchloride, and a single dose of twenty grains of quinine given. The subsequent treatment is that of septicæmia if the temperature rise; or of peritonitis if it be apparent that fluid has passed through the tubes into the peritoneal cavity, which should not have happened, when, if necessary, the abdomen may be opened and washed out.

In an atresic vagina, of which the mucous membrane has not been developed, the canal thus formed by operation is only a line of separation in the layer of connective tissue, of which the tendency to heal is intense, and with much contraction. Thus it is extremely difficult to maintain its patency. Marion Sims introduced a glass cylinder of the form of a Fergusson's speculum with the upper end closed and conical, and this may be used, maintained in position by a pad, and be worn more or less continuously for some length of time. Still the connective tissue contracts, and a second separation may be necessary. Subsequently a glass rod an inch in diameter may be frequently introduced; this, however, is very painful, and the woman may rebel. For the same reason marriage rites do not maintain the canal. Finally, usually a cul-de-sac remains if the uterus be formed, from which there may be discharge, with a sinus at the superior end. But if this be so, the vagina is apt to have walls, which were only adherent, part readily, and a good vagina may persist, or almost complete closure may again occur.

The patency of the uterus may be maintained by occasional dilatation, or a small resection of the os may be made.

In atresia after operation, dilatation with forceps is usually sufficient, or a rather long metrotomy, that is, an incision of a third of an inch.

In parturition with an apparently closed opening the points of a probe-pointed pair of forceps may be introduced, and the handles parted, and the dilatation further extended by a larger pair; a sponge-tent may be introduced and retained for two or three hours, when the natural powers will act and effect expansion.

THE TREATMENT OF PERITONITIS.

Prophylaxis.—The prevention of peritonitis, necessarily, is comprised within the prevention of the evolutionary progress of the conditions which lead to its causation; and this, except for the needful aseptic precautions in operations, and the uncontrollable occurrences in accidents, is contained within moderately narrow limits.

The most common cause being evolutionary virginal or post-parous endometritis, proceeding to blockage of the tubes, and thus to fimbrial effusion, it is necessary that drainage be rendered efficient in cases of small cervical opening, that granular surfaces be resected, lacerations repaired, and the thickened and inflamed endometrium reduced and rendered normal. This may be effected in the manner directed in the chapters on the treatment of endometritis and laceration of the cervix.

The prevention of the advance of gonorrhœa from the vagina to the endometrium is imperative, when the disease is seen in the earlier stage. When it has advanced into the cavity of the uterus it is likely to progress into the tubes, and future evolution is as may be, and is beyond preventive control.

After the occurrence of an original peritonitis, which has caused tubal, ovarian, or perhaps uterine adhesion with displacement, posterior pressing pessaries must be avoided, for in cases in which, with great upward pressure, the normal uterine position may be approximated, the tubal adhesion causes such a drag as must severely angle the tube near its uterine junction, and thus obstruct the passage of its secretion, when luminal collection in the tube will occur with evolutionary discharge in the direction of least resistance, which is not into the uterus.

Similarly, the pressure of a pessary on a misplaced, previously peritonitic, adherent ovary produces undue irritation, and with follicular rupture a peritonitis proportionate to the effusion; the pessary should not have been introduced.

Abdominal exploratory puncture with a trochar is to be avoided; it is dangerous, not rarely fatal, and unjustifiable. Compressed intestine may intervene between the abdominal wall and the tumour, and is thus necessarily doubly perforated.

Think of the danger of introducing a trochar of whatever size, with or without aspiration, whether through the abdominal wall or the vagina, into a dermoid tumour which may be suppurating, for the fat and hair, and perhaps pus, at once block the tube, and on its withdrawal leave these as a foreign body lying between the peritoneal layers, with the almost certainty of a further discharge of the same matters through the opening made in the sac, with perhaps bones to follow, and the expectation of their rapidly becoming septic!

If the tumour be an extra-uterine fœtation, the liquor amnii escapes, and presently an uncertain quantity of blood, which on the withdrawal of the canula passes into the abdominal cavity, and, in combination with progressive necrosis of the ovum, produces vague symptoms of peritonitis, and perhaps the necessity of an immediate operation by abdominal section, which is thus performed under very unfavourable conditions of preparation.

If the tumour be ovarian, the fluid, under the influence of internal tension and muscular and atmospheric pressure, continues to ooze through the opening made in the cyst-wall, which is devoid of muscular fibres to close it, and the peritonitis is proportionate to the quantity and quality of the effused fluid; but adhesions are invariably induced, which complicate the essential future operation.

When a simple hydatid is thus punctured the remainder of the fluid escapes through the non-muscular wall into the peritoneal cavity, and may cause such shock as threatens immediate collapse and death, and in many cases grave anxiety. But if the hydatid contain daughters, many of which are degenerating, the peritonitis may be very active and the results serious, or the escaping daughters adhere to the peritoneum, and the abdominal cavity becomes the home of an uncertain number of new hydatid parasites.

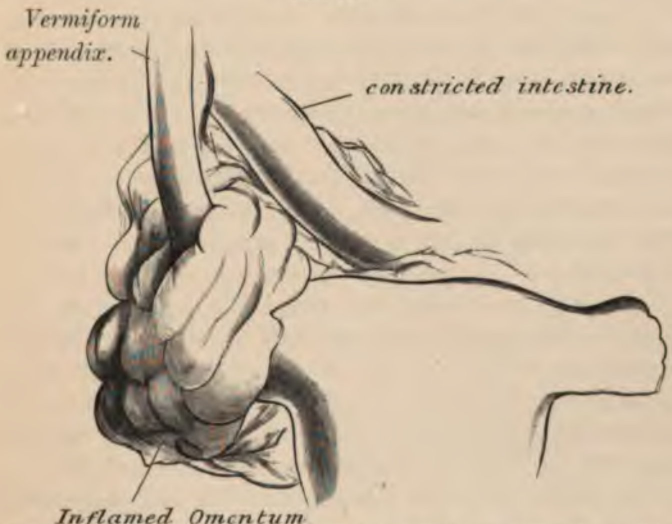
If the exploratory trochar be introduced into a pyo-salpinx, or into an ovarian or other abscess, on withdrawal of the canula the pus will probably escape into the peritoneal cavity; if into a kidney sac, urine or pus escape; if into a myoma or spleen, perhaps extending into the pelvis, or into a solid ovarian tumour, blood may continuously flow; and in cancer there is the certainty of injury, and the uncertainty of what structures, and particularly as to the intestines, may be perforated and contents effused. Who, after introducing an exploratory trochar into a tumour, by desire of a chance consultant who thought he detected fluctuation, and seeing a pulsating column of blood rising and falling with the heart-beat, and presently the woman die from internal and external hæmorrhage, or fluid of an ovarian tumour like warm jelly crawling through the tube, can wish to repeat this serious operation as a mode of arriving at an immaterial diagnosis that should have been sufficiently known before? If this puncture has been made with outflow of pus, it is wiser to leave the canula in, and let it act as a drainage; but this is impossible where a large vessel has been thus perforated, and useless where the contents are too thick to flow.

If a doctor does not consider himself sufficiently experienced to open the abdomen, and in the light meet the conditions present, why should he venture to make a hole in the dark through uncertain structures into a doubtful tumour, with the probability of producing dangerous, and perhaps fatal, results, but almost always without the possibility of doing good, for this is not the object of such puncture? In time of less experience and skill in removal of tumours by abdominal section this was justifiable, but not now. Are the fingers so insensitive, and is the brain so inconsequential, that they cannot define and appreciate the conditions necessarily present sufficiently well to determine whether the operation be desirable or not? Any such condition may be better treated by exploratory abdominal section, when it may be that the disease may be removed. If exploratory puncture be made, it should be on the clear understanding that abdominal section should follow when progressive peritonitis is apparent. It is better to avoid the production of this unnecessary complication.

Exploratory puncture by the vagina is also a dangerous proceeding for the same reasons. Again, if a thickened but non-adherent tube be punctured, the effusing blood produces some peritonitis and adhesions, whereby the tube and ovary on this side are rendered useless, and probably advance in evolutionary disease. Puncture, when adopted, is to be undertaken as a treatment, not as an exploration.

The general rule is to be adopted, that all tumours capable of rupture, or of rotation on their pedicles, are most safely treated by removal at an early date, as on their diagnosis; and this statement is particularly applicable to tubal fœtations, and to small or medium-sized ovarian tumours.

Fig. 114.



The vermiform appendix is adherent to the right tubo-ovarian pedicle (after removal of the appendages), surrounded by adherent inflamed omentum, which retracts and narrows the intestine.

It seems to be risking a great deal, after the removal of a tumour or of the appendages, to drop the undressed stump composed of everted, perhaps inflammatory, membrane of connective and muscular tissue, into the peritoneal cavity; the only instance in which other than peritoneum meets peritoneum is at the fimbriæ; but those are foreign tissues that must be encapsuled. By the irritation produced, the exuded fibrin causes the adhesion of adjacent parts; and in an otherwise normal case I have seen the end of healthy vermiform appendix thus attached, whereby the traction on adjacent intestine induced a slight inflammation, so that the omentum and mesentery became inflamed, and the calibre of the intestine was reduced; a second operation was necessary. It is desirable to stitch the peritoneum over the everted internal structures, so that irritation and cohesion may be reduced as far as lies in our power.

Treatment.—1. The prevention of further effusion is the first indication for treatment, for which the earliest need is rest in bed and absence of excitement. Any cause of local obstruction to drainage through the uterus, producing internal pressure, should such be present and readily remediable, is to be at once removed, as intra-uterine stems or tents, stitches which close the uterine opening, vaginal plugs, or pessaries which may compress a Fallopian tube or an ovarian cyst, follicular or otherwise, or drag on an adhesion. More serious causes involving greater operations are matters for later consideration.

Vomiting, in which the spasmodic contraction of the diaphragm compresses the stomach, directly or indirectly, against every abdominal and pelvic organ and structure, is to be avoided, or stopped. A mustard-leaf or poultice may be applied to the epigastrium and repeated as may be necessary; and in case of vomiting, no food is to be given; unless, in case of great thirst, half a teaspoonful of warm water to moisten the lips, and even this as seldom as possible. In persistent retching, half an ounce of brandy or whiskey in as much cold water, given once at a single drink, with subsequent complete repose, will not infrequently be retained; but frequent sipping maintains the irritation, since the liquid is not absorbed by the stomach, but collects till ejected, perhaps in quantity.

It is of great importance that there shall be no rectal collection, which produces pressure and occupies space, and whereby the peristaltic action is hindered; and an injection of warm water may be given to remove fæces and gas, and thus make room for descent from above, should paralysis of the higher intestinal muscular fibres not have been already induced by the vigour of the peritonitic causation.

Undue pressure by a distended bladder is to be removed, if necessary by the catheter; and care taken to guard against further undue collection.

In view of the intestinal muscular paralysis caused by the local effusion, absolute rest of the intestines is assured, except from progressive distension, and opium is thus unnecessary and contra-indicated; if given, it will still further paralyse the muscles, and thus increase the pressure of the site of effusion and intestinal distension, which, it has been shown, exerts an active influence towards the progressive evolution of further diseased processes.

2. To counteract shock, hot bottles may be applied to the feet, hands, legs, and, it may be, loins; but in the case of an abdominal hæmorrhage, as from a ruptured extra-uterine fœtation, it might be that heat applied near the site of the bleeding were better omitted.

Undoubtedly a hot enema by the rectum of milk or beef-tea and brandy has a powerful effect in stimulating the local nerves when suffering from depression, whether from hæmorrhage or otherwise; and in the former case, indeed, tends to assist a healthy contraction of the vessels and muscular fibres implicated.

3. It is necessary to relieve pain and induce repose; and one of the most grateful measures is the application of moist heat—thus flannels or spongio-piline wrung out of boiling water, repeated every few minutes, are very soothing; and, subsequently, should the weight not be oppressive, sloppy linseed-meal poultices may be substituted, and reapplied every few hours. In the case of internal hæmorrhage, as of the rupture of an extra-uterine fœtation, it might be thought that an ice-bag to the abdomen would be more suitable, and by excessive chilling, it undoubtedly deadens the nerves; but it has to be borne in mind that the heat-production is already greatly diminished by the blood-loss; that the application of cold will still further remove the heat of the body, which must, however, be maintained; that, in puerperal hæmorrhage, the injection of hot is found to be, in practice, far more efficient than that of cold water; and that there is nothing to show that the application of ice is not as likely to cause the contraction

of undesirable as of desirable muscular fibres. I think, therefore, that the local application of ice is contra-indicated; if used, it should certainly be for a very limited time, as it is calculated to check the absorbent action of the lymphatics, whereby Nature endeavours to remove the offending effusion.

Internal sedatives are carefully to be avoided, unless, perhaps, in the quiet mild cases, when their action is immaterial; but in the more severe cases they are likely to prove injurious; if given on a vomiting stomach they will not be absorbed, and may increase the gastric irritation; if absorbed they increase the tendency to intestinal paralysis, which is, in any case of importance, certain to ensue, and to be so difficult to overcome, and which leads to further progressive complication of disease. The same objections do not apply to the same extent to the hypodermic injection of morphia, which may or may not be combined with atropine, a sixth to a quarter of a grain of the former being employed, to be repeated in a few hours, if necessary.

4. Intestinal distension is to be prevented or relieved to the utmost. The employment of a short Keith's glass drainage tube is of the first importance, and may be left in the rectum, protruding into a soap dish, in which is a mixture of phenol. An injection of plain warm water, large or small as may be indicated, every few hours will assist the descent of fæces and gas, which the tube enables to pass the anal sphincters readily; these otherwise remain contracted, and, the intestinal muscles having lost their power of contraction, obstruct the passage, whereby the rectum becomes distended, and so the superior intestines. An occasional large soap or turpentine injection increases the action. No doubt a rectal injection of a drachm of glycerine is a powerful contractor of the lower intestinal muscular fibres; but in case of tubal effusion it would seem possible that it might stimulate action of the circular fibres of the tube, and thus induce further peritoneal outpouring.

Purgatives are of great value to this end, but require care, so as not to irritate the stomach and cause vomiting. Of this class few drugs act more mildly than a single ten-grain dose of calomel, though it is open to the objection that in a patient peculiarly susceptible to its influence it may be absorbed and produce a salivating action; such effect is, however, very rare; or six one-grain doses may be given hourly. Two hours afterwards a drachm of sulphate of magnesia in a drachm and a half of syrup of ginger with six drachms of water may be given, and repeated every four hours, if it do not produce vomiting; and this is calculated to carry off the calomel. Two ounces of Hunyadi Janos in as much warm water may act better, and occasionally Cascara sagrada; and even a two-ounce black draught, of which two drachms are syrup of ginger.

Quinine is particularly valuable in the way of producing contraction of the intestinal muscular fibres, and it has the further advantage of lowering temperature, frequently apparently present from the above influence; twenty grains may be given about four o'clock, when the temperature is apt to be rising, and this dose is usually more effective than more frequently repeated smaller doses. When given in the form of five-grain pills made by McKessan and Robbins the medicine is not tasted, and is less liable to be rejected by the stomach. Occasionally, when vomiting is persistent, it is desirable to give it as a rectal injection.

Nux vomica and belladonna would seem to be indicated, but I have not found them efficacious when given by the stomach; and when the latter is applied to the abdomen it is not absorbed, for in so large a quantity it would be likely to produce an influence on the pupils, throat, and stomach as well, and indeed be poisonous; and I have not seen this, except through its application to the eyes by the patient's fingers. It is a dirty application, and useless.

5. The fifth indication is the mode, quality, and quantity of nutrition. Should vomiting be persistent, it is injurious to keep filling the stomach with food, to be presently ejected undigested, acting only as an irritant for the stomach to contract upon. Yet nutrition is necessary, and the system may be sustained by rectal injections. Some plain warm water may first be injected, the rectal tube introduced, and the fluid and gas run out; if fæcally stained, another squeeze or two of the syringe may be given, until the escaping fluid is clear. After twenty or thirty minutes from a quarter to half a pint of milk

or beef-tea, if necessary with half an ounce or an ounce of brandy or whiskey, may be injected carefully without air. After three hours the rectum may be washed out as before, and the tube remain inserted for about an hour, when the nutritive enema is repeated; and so every four hours. By this means the system may be nourished, and the gas and fæces, when low down, removed.

As soon as vomiting is moderated, food may be given, and half a cupful of arrowroot, made with half milk, is likely to be retained; similarly light farinaceous and milky food, as well as mutton, veal or chicken broth, may be given every couple of hours. More solid food should not be taken till distension has passed off.

6. Excessive temperature may be counteracted by packing the trunk in a sheet, the inner half of which has been wrung out of warm water, the outer half being dry; thus the moisture of the sheet absorbs heat largely from the body, which is not chilled by cold. Ice-cloths may be applied to the forehead, or an ice-cap to the head, and the brain be thus relieved of a dangerous temperature; the constant or intermittent application of this may be regulated by the feelings of the patient. It is a very valuable procedure.

Quinine is a very important aid in this condition, and a single dose of twenty grains about 4 P.M. usually lowers the heat, and keeps it within due bounds, if the cause of the peritonitis permit it. It also has a strong influence on the intestinal muscular fibres, and, when the bowels act, the temperature is apt to be relieved. Alcohol, too, may have a similar effect.

7. To promote the absorption of the effusion, the gentle injection of hot water night and morning by the vagina has a cleansing local effect, and stimulates the vessels and lymphatics to increased action.

But while distension and constipation continue, it is scarcely to be expected that exudation will give place to absorption. Therefore the action of the bowels in a regular and moderate manner is of the greatest importance. An injection of plain warm water, and occasionally with soap, may be given night and morning, and the use of the rectal tube will assist.

Purgatives of a gentle kind are thus valuable, such as drachm doses of sulphate of magnesia every morning, or every four hours; or Hunyadi Janos water; or seidlitz powders, after most of the gas has escaped; and quinine may increase the muscular tone.

Of the medicines more particularly credited with an absorbent influence, potassium iodide with bark is likely to be beneficial, when the lymphatics have been brought by the means previously mentioned within the capacity of performing their functions in this direction; but if absorption be in progress, quinine is better; if the cause have been virulent, these drugs, as others, are ineffective.

Locally, hot fomentations—that is, heat with moisture in the form of flannels wrung out of boiling water or linseed-meal poultices—necessarily exercise a powerful absorbent action. Their moisture softens and removes the surface layers of epithelium, and the heat soothes the nerve and muscular irritation; blood is attracted to the surface, as shown by the skin-blush, and a tendency to perspiration is induced; the waste of tissue caused by the illness, as well as by such local application, requires repair; and absorption, it is to be anticipated, will occur from the neighbourhood, and particularly from the effusion and exudation sites. Subsequently the liniment of iodine may be painted night and morning over the lower abdomen, or mustard leaves or small blisters applied when the state of the skin permits. These irritants, however, rarely appear to exercise material influence in this direction; when possible, absorption proceeds by Nature's forces.

8. The possible need of operative measures may always occur, and must be present in the mind of the physician attending a case of peritonitis. The point to decide, and with most anxious thought, is what is the cause; is absorption of the effusion possible and probable; or is it necessary or desirable to operate, and when? This is a matter of experience and diagnosis; and while in some cases it is necessary to decide within a few hours, it far more frequently is possible quietly and calmly to weigh the conditions, and so to arrive at a definite and wise conclusion, the progress and tendency of the

case forming a strong guide, while it is necessary not to defer operation beyond the possibility of recovery.

The modes of operation are by abdominal section or by opening the vagina.

Abdominal section is alone applicable in all cases of ruptured tumours, and in most cases of diseased ovaries and tubes which have not yielded to the influence of drainage, it being borne in mind that where one tube or ovary is diseased, the other is likely to be similarly affected, and that the removal of the diseased structures can alone be permanently effective.

Yet there are cases in which an effusion or exudation has occurred which has become encysted in Douglas' pouch, the evacuation of which relieves the tension and symptoms. This is not necessarily so; for, the original cause remaining, fresh effusion may occur; yet occasionally it is effectual, and is free from the risk of abdominal section.

For this purpose a small trochar may be introduced into the site of fluctuation in Douglas' pouch, and the serum or pus found. Should the fluid be serum, it is evacuated, when the canula is withdrawn without the admission of air. If there be pus, the flow should be at once stopped by the partial insertion of the trochar in the canula; a Sims' speculum is introduced, and the point of a pair of long sharp-pointed scissors is introduced along the trochar till it enters the abscess sac, when the handles are separated, and a dilated gaping opening is thus made without cutting, through which the pus readily escapes. Should a vessel bleed, which is very unusual, the now flabby vaginal edge may be compressed on one or both sides by a pair of long Pean's forceps, and the hæmorrhage will cease. The cavity may be gently packed with iodoform gauze, and this may be repeated by the physician once or even twice a day, according to the quality and quantity of discharge. No drainage tube is desirable, and it is unnecessary, for the opening made is large, and it is uncertain where the far end of the tube might press. Half a drachm of iodoform may be placed against the opening made in the vagina, and, as it passes downwards with the discharge, it maintains the passage aseptic. An antiseptic pad may be applied externally. It is not rare for cases to do well when treated thus; but the cause is undecided, and, if from tubal effusion, ought to be unilateral for permanent success.

THE TREATMENT OF THE EVOLUTIONARY DISEASES OF THE OVARIES.

Prophylaxis.—The consideration of the cause of evolutionary disease of the ovaries is through preceding disease of the tubes effecting peritonitis; therefore the causes and conditions of tubal disease are to be removed when present, before advance to the peritoneum and ovaries has occurred.

Treatment.—The treatment is of difficulty of rupture of Graafian follicles from thickened external coat; of follicular cysts resulting from failure of such rupture; of papillomatous cystic disease engrafted on the latter; of septic or gonorrhœal abscess; and of cancer.

Of difficulty of rupture of a Graafian follicle with thickened walls, it is probable that nothing affects the result. If the internal pressure become greater than the resistance of the wall, the follicle will rupture; if not, a follicular cyst results. Pain, and particularly an increased temperature as being indicative of evolving peritonitis, require rest in bed. The pain may be treated by moderate doses of bromide of potassium with a few drops of opium, and peritonitis by hot moist applications to the abdomen and relief to the bowels. Whether hot vaginal injections are of service is uncertain, but warm antiseptic injections are cleanly. In fact, it is quite uncertain whether it is desirable for such follicles to rupture or not, the fimbriæ usually not being applied, and the contents therefore falling into the peritoneal cavity; nor can the result be determined by treatment. It is possible that a follicular cyst, when conveniently situated as to the vagina, may be aspirated; but there are usually several, and of both ovaries, and, the dense wall remaining, their cause is not removed.

On their becoming large it is wise to remove them by abdominal section, for their walls are then very thin and liable to rupture.

And similarly of ovarian abscess. The ovary is much enlarged, perhaps to the size of a kidney or larger, and such suppuration is generally multilocular. Both ovaries and tubes are usually affected, so that to puncture or open such an abscess in any form by the vagina is inefficient; it is necessary to remove them by abdominal section.

Other tumours are also treated by the abdomen.

Cancer is described under that title.

THE TREATMENT OF PHLEBITIS AND EMBOLISM.

Prophylaxis.—The preventive treatment of so fatal a disease is of immense importance. Thus all necrosed tumours are to be at once removed in an antiseptic manner.

Antiseptic midwifery is essential, as well as the prevention of the entrance of septic organisms through the air by bad drainage, deficient ventilation, or infection by fluids used as injections, and washing with unclean and therefore septic sponges, flannels, or cloths, and the hands or instruments of attendants. The use of antiseptic napkins or pads is indicated.

After delivery, fœtor requires the removal of disorganising substances and the maintenance of antisepticism.

Treatment.—In the inflammatory condition, it is evident that in all cases of internal rupture there must be laceration of veins with formation of thrombus, probably in each end of the vein which is in contact with the necrosing effusion or sac-wall. Therefore removal of such necrosis is essential at the earliest possible date.

After operation, in view of the certainty of the presence of phlebitis with thrombus, during the normal healing of injured veins, a tonic treatment is indicated rather than a sedative, so that the system may be strengthened to effect a healing action, rather than depressed and lulled into a condition of stagnation by opium or its alkaloids. Of such tonic drugs none is superior to quinine, which in case of rise in temperature may be given in five-grain doses three times a day, or, if the temperature rise to or above 101°, in a twenty-grain dose between 3 and 4 P.M. The treatment of such uncertain phlebitis is that of peritonitis, as indicated under that heading.

Should embolism, whether large or minute, occur, the treatment is that of maintaining life and of neutralising the effects, as well as of attempting to induce a healing action at the site of the original phlebitis, whence the embolus escaped. Absolute and complete rest in the most easy position, without moving or speaking, is essential. In case of the embolus being large and producing symptoms of cardiac or extensive pulmonary obstruction, stimulants are required in the form of champagne, alcoholic rectal injections, hypodermic ether injections, and many hot bottles.

With more minute continuous escape, large doses of quinine, alcohol to the largest extent bearable, and rectal injections of peptonised beef-tea or milk, with as much alcohol as is not injurious.

In the puerperal condition the uterus is to be cleansed, if necessary, by dilatation and curetting under ether, and maintained aseptic by corrosive sublimate or other antiseptic injections given with a double-channelled canula by the physician. The system is to be supported by beef-tea and milk with alcohol. Quinine in the largest doses bearable is to be administered, if possible, three times a day; less frequently if the patient be susceptible to its influence. The tincture of perchloride of iron is an alternative, and may be given in half-drachm doses three times a day—on waking in the mornings, at midday, and at bedtime, while quinine is given at 3 or 4 P.M.

If fomentations or poultices are applied, they are better made with very weak carbolic water.

All excreta need to be heavily disinfected, and the ventilation should be very free. Should the house be unhealthy, the patient should be moved elsewhere, if possible to an upstairs room.

Visitors are injurious, and in case of severe embolism, in which absolute rest is essential, their admission might lead to a fatal result.

THE TREATMENT OF PELVIC CELLULITIS.

Treatment.—The treatment of the class of cases in which the cellulitis is continuous with the genital canal, as in deep laceration of the cervix, and in the production of vesico-vaginal fistula by sloughing from long pressure of the child's head, consists of vaginal antiseptic injections, as of a solution of 1 in 2,000 of hydrargyrum perchloride twice a day, and such an amount of quinine as may be required to sustain the system and moderate the temperature, combined with a nutritious diet suitable to the temperature.

But it is particularly with the cases in which a necrosis or phlegmon of connective tissue is not continuous with the genital canal that we are here concerned. The temperature rising a few days after the confinement, an examination is made, and the uterus is usually found to be apparently quite normal, and perhaps there is a sense of some undefined induration at one side. It is well to syringe out the cavity of the uterus with a warm solution of perchloride with a double canula, to remove any débris that might escape notice; retained clots or portions of placenta require removal with the finger, ovum forceps, or the curette; the vagina is syringed night and morning, the fluid to be changed to a solution of potassium permanganate if desirable. Hot, sloppy linseed-meal poultices may be applied to the abdomen, and changed every four hours; and it is well to make them with the mildest perceptible quantity of carbolic acid; subsequently flannels or spongio-piline wrung out of hot water may be substituted. A twenty-grain dose of quinine, or less if there be extraordinary susceptibility to the drug, may be given between 3 and 4 P.M., when the temperature generally rises. A seidlitz powder, when desirable, on waking in the morning, assisted by a rectal injection, relieves the bowels daily. The diet is nourishing, as milk and broth, without solid food. Should resolution occur and the temperature become normal, the object is gained, and convalescence presently occurs.

But if the high temperature continue, ranging perhaps from 99° to 100° in the mornings and from 102° to 104° at night, a warm pack is useful, composed of a small sheet folded to the length of the trunk from the axilla to the pelvis; half of it is wrung out of hot water, the other half being dry, and it is rapidly rolled up as a bandage, the damp part being inside; it is thus at once applied round the body, and the outside dry part prevents wetting of the bed-linen. The inner layers at once assume the heat of the body, but there is evaporation into the outer layers, and thus the heat of the body is withdrawn without chilling. The condition continuing without marked change, it may be thought well to give the quinine in a five-grain dose three times a day—that is, on waking, at midday, and at bedtime; also some stimulant, as from four to six ounces of whiskey or brandy in the twenty-four hours, generally to be taken with food, as with milk or arrowroot.

The case drags on, and bedsores are to be watched for and prevented by removal of continuous pressure in lying by careful adjustment of pillows, spirit friction, and a lubricant such as vaseline; if necessary a waterbed is used.

At length, either by the vagina, or more frequently towards the iliac region near and above Poupart's ligament, there is a deep and perhaps uncertain sense of fluctuation. The woman's strength is worn out, a leg has perhaps for some time been drawn up, and it is highly desirable to give exit to pus that is known to be thus deeply situated, burrowing into the connective tissue layers of the psoas and iliacus muscles. When the fluctuation is thought to be sufficiently certain, ether is administered, and a fine trochar is introduced, with due regard to the situation of vessels, into the site of fluctuation. Should pus escape on time being given for it to pass through the canula, a good-sized trochar is introduced by the side of the small canula, through which the pus freely escapes. The smaller canula may now be removed, and the large one retained for twenty-four hours; or, if it be thought desirable, a length of rubber tubing, which has been previously provided for the purpose, is passed through the larger canula, which is withdrawn, leaving the tube as a drain. The outer skin may be nicked to remove its contraction and pain; and, should hæmorrhage occur therefrom, compression by Péan's forceps at either side may be applied; and, if necessary, a needle may be passed, and its silk or gut tied on either side. A continuous drain for the abscess has now been safely established, and the tube is shortened as contraction occurs. Convalescence gradually ensues, the leg straightens, and recovery takes place.

Should fluctuation be detected by the vagina, the treatment is of the same character. The fine exploratory trochar proves the presence of pus, when the partial reintroduction of the trochar stops its flow; the point of a pair of very sharp-pointed slightly curved scissors follows the line of the canula into the abscess cavity, and the handles are separated to a sufficient extent, adjacent vessels receding before the blunt outer edges of the blades, and a considerable opening is thus made for escape of pus. Should there be hæmorrhage, the walls of the separated structures are seized and compressed by two or more pairs of Péan's long-pressure forceps, which, if necessary, may be retained *in situ* for a time. A strip of iodoform gauze is introduced into the cavity of the abscess, and may be changed once or twice a day, as may be desirable. A small pad of iodoform gauze is arranged in the vagina against the outer end of the gauze strip, and an antiseptic pad placed against the vulva. The strength is to be well maintained, and quinine given as the temperatures indicate.

Thus exit to pus is given at the earliest possible date and in the safest manner with regard to the congested vessels which are in and surround the inflamed structures, the division of which by a knife might lead to severe, and possibly fatal, hæmorrhage.

In the causation and complication of extensive pyo-salpinx with puerperal cellulitis, Dr. Rowan, of this city, lately operated successfully by removal of the appendages and separation of intestinal adhesions.

THE TREATMENT OF CANCER.

Prophylaxis.—Prevention is to be found in the cure of the original conditions which induce laceration; and, therefore, in the resection of granular surfaces, and particularly the repairing of lacerations with this condition; and in the curing of endometritis, virginal or parous; and in the latter, particularly of the hyperplastic placental site, and of subinvolution. When the ovaries are evolutionarily adherent, and subjected to follicular cystic disease, no doubt their removal would prevent malignant supervention; this, however, is quite proportionately rare, and the removal of all such ovaries, when not necessary from constitutional illness and pain produced by them, would entail an operative list, and practically a mortality far greater than that of the possible occurrence of cancer on this site.

Treatment.—The treatment consists in free removal, if it be possible, of all tissues affected, and well outside of the diseased structures. In some quite old people, and perhaps occasionally in the younger, an evident malignant development on the cervix may be cured by high excision of the cervix; but the more usually necessary operation is vaginal hysterectomy. When the body of the uterus or the ovaries are affected, it is better to perform cœliotomy, when the condition of the degree of extension, or of the lymphatics, is accurately known.

Malignant growths of the vagina may be removed when there is expectation that the whole disease can be excised; but it must have been of short duration and slight extension.

Epitheliomatous cauliflower growths, which have extended beyond the range of complete removal, may be curetted and treated with a plug of cotton saturated with a 1 in 4 solution of the liquor ferri persulphatis, and this may be repeated as seems desirable.

The remainder of the management is by maintaining the strength by food and tonics; and the free use of sedatives by the mouth or rectum, or hypodermically.

In my experience the disease can very rarely be completely removed, having usually advanced beyond the reach of possible excision before the first examination; it should have been prevented by removal of the causes—that is, by cure of endometritis and the granular cervix, whether virginal or lacerative in origin.

THE TREATMENT OF MYOMA.

Prophylaxis.—The prevention of myoma consists in the employment of the uterus, the maternal cradle of the child, the site of its nutrition, and the means of propulsion into the world, in its own work. Thus marriage and pregnancy are the normal preventatives: in marriage with sterility, the production of a healthy state of the opening and endometrium, that pregnancy may occur.

As to treatment by electricity, the remarks made in the chapter on the prophylaxis of extra-uterine fœtation apply equally to its influence on myoma. The naturally slow growth, tendency to stagnation, and, after the menopause, to atrophy, have always to be borne in mind. No liability to disintegration by operative puncture or otherwise, in view of this inherent tendency of myoma, is justifiable.

Pregnancy, and therefore marriage, with an interstitial or submucous myoma of size, is to be avoided; and, should it occur, it is best to produce abortion at as early a period as possible.

On the development of the tumour the first consideration is the state of the opening and the endometrium; for if there be obstruction, there is endometritis with engorgement, and thus an undue and excessive blood-supply in the muscular layers, with irritation. Something of the same state is induced by normal pregnancy, when the muscular strata also hypertrophy. In the married with sterility, the opening is almost invariably small, unless the myoma has developed in the virginal stage before marriage; but this condition may have been induced. It is exceedingly important that this should be at once relieved and normal drainage effected. This is the more to be advised as it is so safe, so readily effected, and so desirable both as to cause, influence on progress on growth, and on dysmenorrhœa and menorrhagia. Thus free dilatation, curetting of the thickened varicose endometrium, and resection to effect a free os, are necessary. In many cases such relief is afforded that, beyond watching the progress, nothing more is needed.

Yet it may be thought to be desirable to maintain a state of contraction of the uterus to diminish nutrition, and thus muscular growth; for which purpose ergot is almost invariably and universally employed.

There is no doubt that ergot has the power of causing contraction of the uterus under certain circumstances, as in labour; but so much disappointment ensues on its employment in some other conditions, that it is worth while to consider what may be its mode of action; and thus some conclusion may be arrived at as to the cases it may benefit.

In epidemics of poisoning by eating bread containing ergot, dry gangrene of the extremities and nose, and abortion, are prominent results. Also on its medicinal administration in parturition, contraction of the uterus ensues. Thus two modes of action are defined; in the more limited action in pregnancy the uterine muscular fibres are made to contract; and in poisonous doses the arteries contract, and are stenosed or closed.

Myomata are composed—

(1) In the red form of an enormous, equal and rapid multiplication of all the muscular cells of the body of the uterus, and there is no defined connective-tissue capsule, after the manner of the pregnant uterus; but the fibres are not disposed in layers as in the pregnant uterus, and there is great interstitial vascularity.

It might be thought that ergot would be of service in this condition, but the growth is very rapid, and is probably beyond the repressive influence of non-poisonous doses; just as in epidemic ergot-poisoning death ensues with gangrene accompanied by abortion. It may be tried in non-poisonous doses as the only medical treatment available, in the hope that it may cause contraction of the individual muscular cells, not, however, with the expectation that it will act on the muscular fibres of the arteries, for then gangrene of other parts would probably also ensue: but the exact mean between production of contraction of uterine and non-contraction of other arteries could not be attained.

(2) The muscular fibres are inclosed within a dense capsule, they are pale and glistening, and on section protrude, forming a convex surface; and on operation there is no hæmorrhage or injury internal to the capsule, for vessels are compressed by the compactness of these muscular fibres. Externally may be a layer of ordinary uterine muscular fibres, generally of small extent, for the tumour has grown between, and separated them.

As to the advantage to be derived from ergot, the muscular fibres are already densely compressed, and thus there is no gain in an increased contraction of the individual fibres, assuming it could be produced, which could only lead to cessation of their nutrition, softening, and disintegration, with fatal results. The attempt at contraction of the vessels is as dangerous with regard to general gangrene as in the former case.

(3) In the œdematous form, the tumour is usually single, large, wet and flabby, without compression of contents; the capsule is thin and lax, and there is no, or almost no, muscular layer external to the tumour.

The muscular cells of the tumour are far too œdematous and flabby to be capable of reaction to the stimulus of ergot, or any other excitant. The capsule is very thin and lax, and no, or almost no, muscular layer is external to it for ergot to act upon. The effective action of ergot on the vessels would probably at once produce degenerative breaking down of cells, and is open to the systematic objection previously mentioned.

As regards situation (*a*) in the subperitoneal tumour, a muscular layer is internal to it.

Contraction of this underlying muscular layer is probably in progress, expressing the tumour towards the abdominal cavity, and it is useless to increase this impetus; and the tumour, occupying a situation which in itself, without separation from the uterus, produces no symptoms, is harmless. But ergot cannot improve the condition, and may facilitate such separation.

(*b*) The interstitial tumour of prominent and symptomatic size projects and distends the peritoneal layer and the endometrium; and no, or but a slight, muscular layer is external or internal to it.

The tumour advances in the direction of its greater growth or least resistance. Lateral muscular fibres external to the capsule might be made to contract, but without advantage, for it would grow internally or externally.

(*c*) The submucous myoma may have a strong layer of muscular structure external to it, but none on the internal aspect, where the mucous membrane is not rarely hypertrophic in an early stage; and subsequently may be thinned by pressure, and finally separate. Generally, however, the thinned mucous layer advances before the extruding myoma. Should it split, and the tumour extrude, the latter dies from lack of nutrition by its surface vessels.

When this submucous tumour is not complicated by the presence of interstitial or subperitoneal myomata, and there is a tolerably thick layer of muscular fibres external to it, ergot is likely to induce their contraction. But the irritation resulting from the presence of such a tumour of itself produces their contraction, so that the tumour is presently found in or towards the uterine cavity. The drug may, and probably does, hasten such extrusion, and is thus wisely given within such limits as do not cause undue contraction and pain.

Also in menorrhagia, where the varicose veins have ruptured into the uterine cavity and have not the capacity of closing, a general contraction of muscular fibres external to the tumour or tumours may cause venous compression, and thus the loss of blood is limited. This is highly desirable, and the use of the drug is thus indicated at these times; but no influence is produced on the growth of the myomata, otherwise than in the condition designated.

Thus, should the drainage of the uterine canal and the varicosity of the veins have been relieved by dilatation, curetting, and the formation of a free opening, so that menorrhagia only occurs, perhaps, at lengthened intervals, this may be checked by the use of ergot, and the strength be maintained till the menopause, when atrophy is likely to ensue, unless the relation of the veins and lymphatics be such as to induce the œdematous form by their obstruction.

The preparations of ergot vary greatly in strength and efficiency, and the doses usually given appear on experiment to be inadequate to produce any material effect; so that in ordinary doses the progress of the case may not be dependent on the action of the drug. And, conversely, the natural progress of myoma is so slow and variable that it is difficult to estimate the influence of the drug. It is essential always to remember that myoma is usually very slow in growth, rarely mortal, and that there is a strong disposition towards health at the normal time of the menopause.

The tying of the uterine arteries is a mode by which the nutrition of myomata, particularly of those occupying sites in the lower zones of the uterus, might be limited. The objections are that in the enlargements which occur in this disease the exact relations of the arteries and veins and the size of the latter are difficult to define, and one or other may be wounded;

also the ureter may be inclosed in the ligature; but the ovarian arteries are still patent. Should the limitation of nutrition be effective, it may be excessive, and necrosis of central parts of the tumours result, which occurs at times by arterial obstruction without ligature.

The occurrence of the menopause habitually causes the cessation of growth of myomata, unless venous and lymphatic obstruction have rendered them independent of ovarian influences. Thus the removal of the ovaries and tubes so as to accelerate this occurrence is of great value in the hard tumours, and occasionally in the œdematous or cystic; for the venous obstruction may be of the pampiniform plexus and dependent on enlargement of the ovarian arteries, when their occlusion relieves the tension. In this happy relation the tumour may diminish so that presently it ceases to exist, and there remains no trace of it, for the mass of the tumour was fluid. But if the obstruction be of the uterine veins, which is the more common, relief is not afforded, for more blood is pumped in through the uterine arteries than can escape through the angled or compressed uterine veins. Indeed, the ligature of normal ovarian veins may be a disadvantage by limiting the return of the blood. Were the appendages removed and the vessels thus tied, and the uterine arteries tied, necrosis of the tumour would probably ensue by deficiency of nutrition.

In the submucous form of moderate size, when the growths are not unduly multiple, and the serious symptoms are attributable to the more internal growth, which is, indeed, frequently single, and has been projected into the uterine cavity by the contracting action of healthy muscular fibres external to it, the tumour may be reached by the vagina. When sessile, of dimensions up to about the size of a swan egg, after free dilatation an opening into the capsule at about the middle of the projecting tumour may be made at a weak spot with the finger or Thomas's spoon-saw, and the rent continued around it, through which the tumour may be enucleated. When of larger size it may be necessary to remove central pieces consecutively with the scissors, so that the sides collapse, until the size is sufficiently reduced to admit of withdrawal.

In the polypoid form the pedicle is divided with the ecrasure so as to compress the contained vessels, or, when small, by rotation of the tumour. In polypi of large size, it is essential that the whole tumour be removed at the one operation by the above described morcellement, else that which is left becomes septic, and the woman is liable to die of septicæmia.

It is surprising what large myomata may be removed by this process; but such operations are long, and apt to be very exhausting.

Finally, in cases in which peritonitis is of frequent occurrence, the tumour of such size or situation as to produce intestinal obstruction, menorrhagia excessive, and, on abdominal section, the appendages so embedded in the tumour as not to be removable, or so situated by partial rotation of the tumour as not to be removable without great injury to the myoma, the tumour of the soft œdematous form and rapidly progressive, and the obstruction is of the uterine veins, or the tumour has undergone interstitial softening, it is necessary to remove it and the uterus by the mode of hysterectomy adapted to the case.

Of such operations, undoubtedly the most safe in suitable cases is by the method of the extra-peritoneal pedicle, and in myoma deeply implicating the cervix by a complete removal of the uterus.

For the modes and details of these operations the reader is referred to works dealing with this subject, since they are not within the compass of the consideration of disease and treatment here undertaken.

ON ABDOMINAL SECTION.

A diagnosis having been made, which after much experience is in all expectation correct, the abdomen is opened. The conditions then found demand an immediate operative treatment, which cannot have been with exactness previously determined. Every act is of vital importance. Accordingly, the knowledge required is such as assumes an intimate acquaintance with the whole range of the removal of tumours, even with the most intricate adhesions, from the abdominal cavity; and with the various instruments necessary for any one of the special operations demanded, which include the most extensive, delicate, and dangerous which the surgeon attempts; and, perhaps, with succeeding operations, requiring an appreciation of conditions evolutionary from what has already been done. The immediate and continued existence or future value of the woman's life is in his hands, and is dependent on his knowledge and capacity. In other operations the treatment may be limited to a limb; here it is of the central cavity of the body, containing vital organs, and the knowledge and experience required must be as extensive as the pathology of all the conditions and evolutions of the affected parts, and perhaps of a previous operation, and every act is vital or mortal. The position is intensely responsible. The apparently simplest case for operation may entail an operation of the greatest difficulty.

It is not within the limits of this work to enter upon so extensive a subject, which requires a book to itself, and the cœliotomist is referred to works specially devoted to the subject.

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